NUEXCO

Monthly Report

October 1992 Number 290

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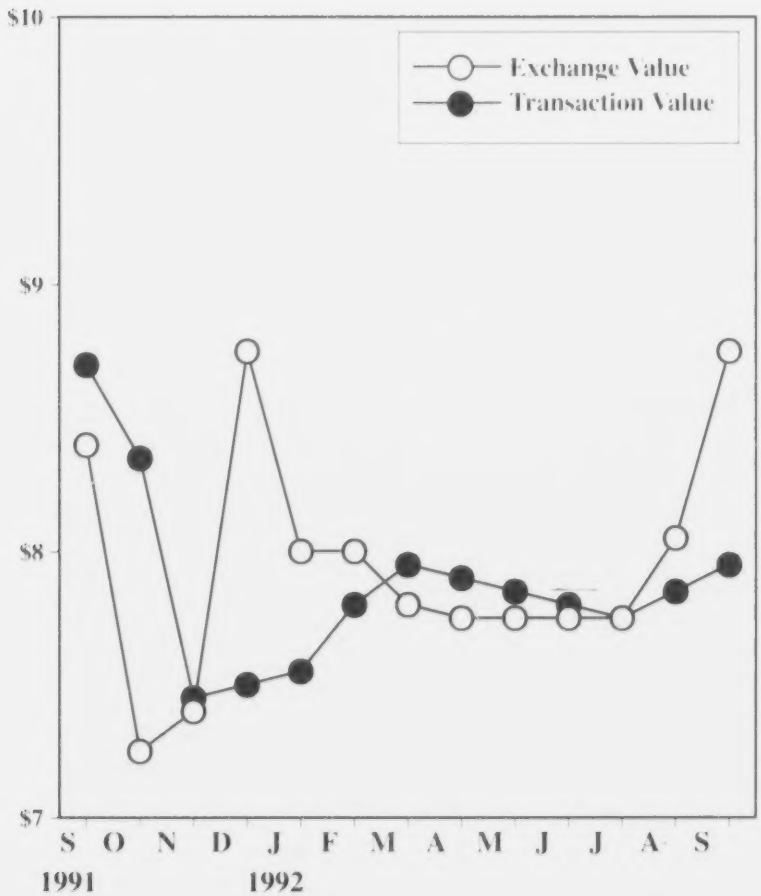
Uranium Supply Potential of the Central Asian Republics 29



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- **Organization of the German Nuclear Industry**

Recent acquisitions and mergers, reunification of the country, and preparation for a unified European power market have led to many significant ownership changes in the German nuclear industry in the past few years. This article and the fold-out diagram detail most of the key ownership interests of Germany's nuclear utililities.

Speech 29
- **Uranium Supply Potential of the Central Asian Republics**

In his speech to the US Council for Energy Awareness, NUEXCO Vice-President Dustin J. Garrow describes the history of the uranium industry and its potential effect on world uranium supply of the Central Asian republics of Kazakhstan, Uzbekistan, Tajikistan, and Kyrgyzstan.

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Market Values Summary

NUEXCO Market Values	This Report September 30, 1992	Last Report August 31, 1992	12 Months Ago September 30, 1991
EXCHANGE VALUE [1]	**$8.75** / lb equivalent U_3O_8	$8.05	$8.40
UF_6 VALUE [2]	**$26.00** / kg U as UF_6	$24.25	$25.50
LOAN RATE [3]	**3.0%** / annum	3.0%	3.5%
CONVERSION VALUE [4]	**$1.40** / lb U as UF_6	$1.50	$1.55
SWU VALUE [5] (0.3 % tails assay)	**$68** / SWU	$66	$67
TRANSACTION VALUE [6]	**$7.95** / lb equivalent U_3O_8	$7.85	$8.70
Transactions	**29**	28	20
Months	**3**	3	3
Millions of Pounds	**7.8**	8.3	4.4

DEFINITIONS

[1] The **Exchange Value** is NUEXCO's judgment of the price at which transactions for significant quantities of natural uranium concentrates could be concluded as of the date indicated.

[2] The **UF_6 Value** is NUEXCO's judgment of the price at which spot and near-term transactions for significant quantities of natural uranium hexafluoride could be concluded as of the date indicated.

[3] The **Loan Rate** is NUEXCO's judgment of the annual interest rate at which uranium loans could be concluded as of the date indicated.

[4] The **Conversion Value** is NUEXCO's judgment of the price at which spot and near-term transactions for significant quantities of conversion services could be concluded in the secondary market as of the date indicated.

[5] The **SWU Value** is NUEXCO's judgment of the price at which spot and near-term transactions for significant quantities of enrichment services could be concluded as of the date indicated.

[6] The **Transaction Value** is a weighted average price of recent natural uranium sales transactions. The calculation is based on prices paid in:

a) Transactions closed within the previous three month period for which delivery is scheduled within one year of the transaction date;

b) At least ten transactions;

c) Transactions involving a sum total of at least 2 million pounds equivalent U_3O_8.

DERIVATIONS AND COMMENTS

- All **Market Values** are expressed in terms of US$.
- All **Market Values** are based on:
  - Data from recently completed transactions.
  - Data from pending transactions.
  - Firm bids to buy or borrow, and firm offers to sell or lend.
  - Prices purchasers or rates borrowers have expressed a willingness to pay, but for which NUEXCO is not aware of firm bids to buy or borrow and prices sellers or rates lenders have expressed a willingness to accept, but for which NUEXCO is not aware of firm offers to sell or lend.
- Prices associated with deliveries under old or renegotiated contracts or other than arm's-length transactions are not included in the determination of these **Market Values**.
- In the determination of prices, NUEXCO does not consider charges for transportation other than that customarily provided by suppliers.
- The prices of services or materials delivered under long-term contracts with primary suppliers are not considered in the determination of the listed values.
- For the **SWU Value**, NUEXCO converts SWU prices at varying tails and product assays to equivalent SWU prices at a tails assay of 0.30 weight-percent (%) ^{235}U and a product assay of 3.0 weight-percent ^{235}U, assuming feed costs corresponding to the NUEXCO **Exchange Value** and **Conversion Value** determined as of the same date.
- In calculating the **Transaction Value**, NUEXCO does not account for the price of uranium delivered in connection with contracts which call for "market price" mechanisms. This exclusion applies particularly to contracts in which delivery prices are expressed as a function of future **Exchange Values** or any other indeterminate variable. Also excluded from the calculation are any other transactions in which the delivery price is defined in such a way that it can not currently be determined.
- The sample time for the **Transaction Value** is extended as necessary to satisfy the minima for the number of transactions and quantity of material. Other currencies are converted to US dollars using conversion rates in effect on or near the transaction date.

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MARKET REVIEW

SEPTEMBER MARKET REVIEW

(as of September 30, 1992)

OVERVIEW

Prices climbed steadily during September, as market participants speculated on higher prices due to the anti-dumping case. The September 30 Exchange Value rose $0.70, to $8.75 per pound U_3O_8 and the UF_6 Value increased $1.75, to $26.00 per kgU as UF_6.

Eight near-term uranium transactions were reported, totalling more than 2.7 million pounds equivalent U_3O_8 (**Table 1**). The market continued its relatively high level of activity and, year-to-date, 100 spot and near-term uranium transactions have been reported for a total exceeding 32.4 million pounds equivalent U_3O_8. This volume already surpasses the total annual sales volume of both 1989 (32.3 million pounds) and 1991 (30.0 million pounds), falling short only of the 1990 record of 40.1 million pounds. Given the traditional reduced level of fourth quarter market activity, it is unlikely, absent a surge in demand in reaction to an anti-dumping decision, that 1992 sales volume will overtake the 1990 record volume.

The Loan Rate remained unchanged at 3.0 percent per annum. One loan for a small quantity of concentrates was reported. The Conversion Value fell $0.10, to $1.40 per pound U as UF_6, as sellers competed for limited secondary market sales opportunities. One near-term conversion sale was reported, involving a moderate quantity of conversion services, and one long-term sale, involving a large quantity for delivery from 1993 through 1997, also was reported.

The SWU Value climbed two dollars, to $68 per SWU, as the anti-dumping case also affected the enrichment market. One enriched uranium product (EUP) sale was reported, involving a large quantity of SWU and contained uranium feed.

Table 1
NEAR-TERM URANIUM SALES SUMMARY

	September 1992		Year-to-Date	
	No. of Sales	Volume [1]	No. of Sales	Volume [1]
Concentrates	3	0.5	65	19.2
Natural UF_6	4	0.7	22	6.4
EUP	1	1.5	13	6.8
Total [2]	**8**	**2.7**	**100**	**32.4**

[1] Million pounds equivalent U_3O_8
[2] Due to independent rounding, columns may not equal total.

NATURAL URANIUM AND CONVERSION

The convergence of a number of different factors, both individually and collectively, has led to a complex situation in the spot and near-term uranium market. These factors include:

- Form of the uranium.
- National origin of the uranium.
- Physical location of the uranium.
- Specifications of the uranium.
- Size of the lots offered or sought.
- Credibility of the buyers and sellers.

None of these factors is new to the marketplace, nor is it unusual to have all of them present and interacting simultaneously from time to time. Depending on the given situation, the influence of one or more of these factors may result in prices being paid that are higher or lower than the Exchange Value.

The interaction of these factors will occasionally result in wider than normal price distributions. Higher prices may be evident when a buyer insists upon specific nationality, specific tonnage, specific delivery date or location, specific category of seller, or some combination of the above. Similarly, lower prices may be evident if quantity, form, nationality, delivery date, or location is other than what is optimally desired. The definition of Exchange Value presumes no particulars other than *uranium concentrates*. Thus, depending on individual circumstances and the values attributed to one factor or another, actual prices paid may

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be higher or lower than the Exchange Value. Disparities among the values attributed to these factors by buyers and sellers can account for wide variations in price.

Over the past few weeks, several factors have contributed to a wider price range than has been typical, and key deadlines concerning the anti-dumping case have become focal points for market participants. September 16 was the initial deadline for a negotiated suspension agreement; this deadline was extended 20 days, but even so, no settlement was reached. The next critical date is October 16, when the Department of Commerce is scheduled to issue its final determination. The case then goes to the International Trade Commission (ITC), which will decide if injury to the domestic industry has occurred.

During September, as these dates approached, potential implications of the anti-dumping petition had an increasing impact on the uranium market. Speculating on higher prices, some sellers were less aggressive, and some buyers hedged by making discretionary purchases. At least three of September's eight reported uranium transactions were concluded by discretionary buyers, possibly in an effort to protect against a future price rise. Less aggressive sales efforts and increased discretionary demand can each support a price increase; with both occurring in September, market prices climbed steadily during the month.

Table 2
NEAR-TERM SUPPLY/DEMAND SUMMARY

	Active Supply[1]	Active Demand[1]
• Uranium (thousand lbs equivalent U_3O_8)	6,730	1,675
• Supply/Demand Ratio:	4.0	
• Loan (thousand lbs equivalent U_3O_8)	8,650	1,250
• Conversion (thousand lbs U as UF_6)	3,300	620
• SWU (thousand SWUs)	905	480

[1] Supply and Demand tables in the Market Review section of this Report provide details for each category.

The September 30 **Exchange Value** increased $0.70 (8.7%), to **$8.75** per pound U_3O_8. Specific bids and offers ranged above and below the Exchange Value, as delivery and origin considerations significantly affected prices.

Three near-term concentrates transactions were reported, in which two US utilities and an intermediary purchased a total exceeding 500 thousand pounds equivalent U_3O_8. All three sales transpired earlier in September and, consequently, occurred at price levels below the September 30 Exchange Value.

* * *

As in the concentrates market, UF_6 prices increased consistently throughout the month, and the **UF_6 Value** rose $1.75 (7.2%), to **$26.00** per kgU as UF_6. The primary influences on the UF_6 market this past month were geographic and origin considerations. Four natural UF_6 transactions were reported, in which US utilities purchased more than 700 thousand pounds equivalent U_3O_8 for near-term delivery. All four sales occurred earlier in the month, and were concluded at price levels below the September 30 UF_6 Value; all involved US buyers and sellers.

* * *

No **long-term uranium** transactions were reported during September, although at month end, five utilities were evaluating long-term offers totalling as much as 27.6 million pounds equivalent U_3O_8 for delivery during the period 1993 through 2005.

* * *

The **Transaction Value** climbed $0.10 for the second consecutive month, to **$7.95** per pound U_3O_8. Higher-priced sales during August and September led to the increase, although the amount of increase was moderated by the high volume of lower-priced sales in July. The September 30 Transaction Value was based on 29 transactions over three months involving 7.8 million pounds equivalent U_3O_8.

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MARKET REVIEW

As sellers became less aggressive, **active uranium supply** declined somewhat, dropping by 1.5 million pounds, to **6.7** million pounds equivalent U_3O_8. Simultaneously, some discretionary buyers, looking to hedge against future price increases, entered the market, and **active uranium demand** at month end had increased by 370 thousand pounds, to **1.7** million pounds equivalent U_3O_8 (**Table 2**). Although supply still dwarfs demand, and the **supply/demand ratio** equals **4.0**, much of the supply can be considered price sensitive, with its near-term availability dependent on higher spot market prices.

* * *

The **Loan Rate** remained unchanged at **3.0** percent per annum, and available loan supply increased to more than 8 million pounds equivalent U_3O_8. Only one natural uranium loan was reported, in which an intermediary borrowed a small quantity of concentrates from a producer. A number of additional loans are in various stages of negotiation as market participants continue to view the loan market as an attractive means of achieving a positive return on excess inventories.

* * *

The **Conversion Value** declined $0.10, to **$1.40** per pound U as UF_6. Sharp competition among sellers, particularly in the USA, for limited secondary market sales opportunities led to the decrease. One near-term transaction was reported, in which a utility purchased a moderate quantity of conversion services at a price near the September 30 Conversion Value. In addition, one long-term transaction was reported; earlier in the year, a US utility purchased a large quantity of conversion services from a primary convertor for delivery during the period 1993 through 1997.

* * *

ENRICHMENT SERVICES AND ENRICHED URANIUM PRODUCT

The same factors affecting the uranium market also have affected the enrichment market. The **SWU Value** climbed two dollars, to **$68** per SWU. Sellers were less aggressive in September, but the associated price increase was tempered by the continued low level of demand. One enrichment transaction was reported, in which an intermediary purchased approximately 1.5 million pounds equivalent U_3O_8 and a large quantity of SWU in the form of EUP.

Table 3
ENRICHMENT PRICES
(September 30, 1992)

Prices	This Month Report 290	Last Month Report 289	12 Months Ago Report 278
NUEXCO SWU Value ($US per SWU)	68	66	67
US DOE SWU prices: ($US per SWU)			
USC	125.00[1]	121.50[2]	121.50[2]
AFC	153.00[3]	153.00[3]	153.00[3]
Requirements	157.00[3]	157.00[3]	157.00[3]
Incentive Price (IP2)	109.05[4]	104.75[5]	104.75[5]
Calculated worth of enriched UF_6[6]: ($US per KgU as UF_6)			
2.0 % ^{235}U	223	213	219
2.5 % ^{235}U	312	298	306
3.0 % ^{235}U	403	386	396
3.5 % ^{235}U	497	476	488
4.0 % ^{235}U	592	567	582
4.5 % ^{235}U	689	660	677

[1] Effective 10/1/92.
[2] Effective 10/1/91 to 9/30/92.
[3] Effective since 10/1/84.
[4] Provisional IP2 for FY93: Effective 10/1/92 to 9/30/93, for up to 30% of annual requirements.
[5] IP2: Effective 10/1/91 to 9/30/92, for up to 30% of annual requirements.
[6] Calculated using the NUEXCO Exchange Value, Conversion Value, SWU Value and 0.30 % ^{235}U tails assay.

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RECENT TRANSACTIONS

Uranium Sales[1]

NUEXCO Transaction Number	Delivery Period	Approximate Quantity (thousand pounds equivalent U_3O_8)	Price Within Percentage Range[2] of Current Exchange or UF_6 Value	Buyer	Seller	Remarks
5545	1993	101-300	90-97	Intermediary	Intermediary	
5548	1992	Less than 50	90-97	Utility	Intermediary	UF_6
5549	1992	101-300	90-97	Utility	Intermediary	
5552	1992	50-100	90-97	Utility	R	
5553	1992-1994	101-300	90-97	Utility	Intermediary	UF_6
5555A	1992-1993	1,001-3,000	See remarks	Intermediary	R	Contained in EUP
5556	1993	101-300	90-97	Utility	Intermediary	UF_6
5557	1993	101-300	90-97	Utility	Intermediary	UF_6

R means that NUEXCO either does not know, or that NUEXCO has restricted that information to protect client or source confidentiality.

1 Transactions listed are not limited to those in which NUEXCO was involved, but also include others of which NUEXCO is aware. NUEXCO may delay reporting some transactions in order to protect proprietary information.

2 The ranges *Below 90, 90-97, 98-102, 103-110, Above 110,* represent percentages (rounded to whole numbers) of the appropriate current Exchange Value or UF_6 Value. The endpoints of each range are included within that range.

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MARKET REVIEW

RECENT TRANSACTIONS

Natural Uranium Loans[1]

NUEXCO Transaction Number	Delivery Period	Approximate Quantity (thousand pounds equivalent U_3O_8)	Price Within Percentage Range[2] of Current Loan Rate	Borrower	Lender	Remarks
5558	1992	101-300	103-110	Intermediary	Producer	

Conversion Sales[1]

NUEXCO Transaction Number	Delivery Period	Approximate Quantity (thousand pounds of U equivalent)	Price Within Percentage Range[2] of Current Conversion Value	Buyer	Seller	Remarks
5543	1992-1997	301-600	R	Utility	Convertor	Occurred earlier in 1992
5559	1993	101-300	R	Utility	R	

Enrichment Sales[1]

NUEXCO Transaction Number	Delivery Period	Approximate Quantity[3] (thousand SWU)	Price Within Percentage Range[2,4] of Current SWU Value	Buyer	Seller	Remarks
5555B	1992-1993	301-600	See remarks	Intermediary	R	Contained in EUP

R means that NUEXCO either does not know, or that NUEXCO has restricted that information to protect client or source confidentiality.

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2 The ranges *Below 90, 90-97, 98-102, 103-110, Above 110,* represent percentages (rounded to whole numbers) of the appropriate current Market Value. The endpoints of each range are included within that range.

3 If tails assay is unknown or unspecified, NUEXCO's calculation of SWU quantity assumes 0.30 -/o tails assay.

4 Prices are usually normalized to 0.30 -/o tails assay. When prices and SWU values are expressed as discounts from a reference price (e.g., X dollars less than DOE's USC base price at time of delivery), the percentage price range is based on the discounted prices, not on the reference price.

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SUPPLY AND DEMAND

Uranium Supply

NUEXCO Project Number	Quantity (Thousand Pounds equivalent U_3O_8) Spot or Near-term[1]	Intermediate or Long-term[2]	Delivery Period	Remarks
AVAILABLE FOR SALE:				
ACTIVE				
90-1078A	235	—	1992-1993	UF_6
91-1505	1,250	—	1992-1993	
91-1507	500	—	1992	
91-1511	1,305	—	1992	UF_6/UF_6
91-1512	785	—	1993	UF_6
92-1141	200	—	1992	
92-1194	200	—	1992	
92-1201A	840	—	1993	UF_6
92-1501A	915	—	1992	UF_6
92-1512	500	—	1993	
91-1268	—	600 per year	1992-1999	
92-1129	—	2,600 per year	1993-1999	
92-1185	—	2,600 per year	1993-1999	
92-1261	—	520 per year	1993-2000	
92-1513	—	1,300 per year	1992-1999	
TOTAL	**6,730**			
INACTIVE	**2,800**			
AVAILABLE TO LOAN:				
ACTIVE				
92-1072	3,100	—	1992	UF_6
92-1074	1,000	—	1992	
92-1206	500	—	1992	
92-1258	1,250	—	1993	
92-1267*	400	—	1992	
92-1268*	1,000	—	1992	
92-1503	1,000	—	1992	
92-1515	400	—	1992	
TOTAL	**8,650**			
INACTIVE	**1,610**			

* New or revised since last month.

1 For delivery within one year, measured from the date of this Report. This category excludes material deliverable within one year under other than spot or near-term contracts.

2 For delivery beyond one year, measured from the date of this Report.

Active Projects reclassified as Inactive since last month: *none*

Active Projects removed since last month: 92-1257A

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MARKET REVIEW

SUPPLY AND DEMAND

Uranium Demand

NUEXCO Project Number	Quantity (Thousand Pounds equivalent U_3O_8) Spot or Near-term	Intermediate or Long-term	Delivery Period	Remarks
INQUIRIES TO PURCHASE:				
ACTIVE				
92-1255	125	—	1992-1993	
92-1264A	30	—	1992-1993	UF_6
92-1279*	220	—	1992	
92-1283A*	200	—	1993	UF_6
92-1285*	500	—	1993	
92-1289*	100	—	1993	U_3O_8/UF_6
92-1514	500	—	1993	U_3O_8/UF_6
91-1184	—	350 per year	1993-1997	
92-1199	—	2,000	1992-1999	
92-1223	—	400 per year	1997-2000	U_3O_8/UF_6
92-1226	—	300 per year	1994-1996	
92-1235	—	500 per year	1995-2000	U_3O_8/UF_6
92-1245	—	1,960	1993-2000	UF_6
92-1252	—	4,000	1995-2000	
92-1253*	—	800 per year	1996-2003	
92-1274A*	—	790	1993-1996	U_3O_8/UF_6
92-1276*	—	800 per year	1993-1997	
92-1280*	—	2,000	1993-2000	
92-1281*	—	2,000	1993-2000	
92-1287*	—	750 per year	1996-2000	U_3O_8/UF_6
92-1290*	—	200 per year	1993-1996	
TOTAL	**1,675**			
INACTIVE	**1,785**			
INQUIRIES TO BORROW:				
ACTIVE				
92-1505	500	—	1992	
92-1511	750	—	1992	
TOTAL	**1,250**			
INACTIVE	*none reported*			

* New or revised since last month.

1 For delivery within one year, measured from the date of this Report. This category excludes material deliverable within one year under other than spot or near-term contracts.

2 For delivery beyond one year, measured from the date of this Report.

Active Projects reclassified as Inactive since last month: *none*

Active Projects removed since last month: 92-1152A, 92-1227, 92-1231, 92-1256, 92-1259

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SUPPLY AND DEMAND

Conversion Supply and Demand

NUEXCO Project Number	Quantity (Thousand Pounds equivalent U_3O_8) Spot or Near-term	Intermediate or Long-term	Delivery Period	Remarks
AVAILABLE FOR SALE:				
ACTIVE				
91-1500	400	—	1992	
91-1501	1,100	—	1992	
92-1190	300	—	1993	
92-1507	500	—	1992	
92-1516	1,000	—	1992	
TOTAL	**3,300**			
INACTIVE	*none reported*			
INQUIRIES TO PURCHASE:				
ACTIVE				
91-1275	620	—	1992-1993	
92-1178	—	3,300 per year	1992-1995	
92-1274B*	—	670	1993-1996	
92-1275*	—	85	1994	
TOTAL	**620**			
INACTIVE	*none reported*			

* New or revised since last month.

1 For delivery within one year, measured from the date of this Report. This category excludes material deliverable within one year under other than spot or near-term contracts.

2 For delivery beyond one year, measured from the date of this Report.

Active Projects reclassified as Inactive since last month: *none*

Active Projects removed since last month: *none*

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MARKET REVIEW

SUPPLY AND DEMAND

SWU Supply and Demand

NUEXCO Project Number	Quantity (Thousand Pounds equivalent U_3O_8) Spot or Near-term[1]	Intermediate or Long-term[2]	Delivery Period	Remarks
AVAILABLE FOR SALE:				
ACTIVE				
90-1078B	75	—	1992-1993	UF$_6$
91-1509	200	—	1992	
91-1515	100	—	1992	
92-1201B	180	—	1993	UF$_6$
92-1501B	100	—	1992	UF$_6$
92-1124	250	250 per year	1992-1994	
TOTAL	**905**			
INACTIVE	**50**			
INQUIRIES TO PURCHASE:				
ACTIVE				
92-1236	40	—	1993	
92-1264B	5	—	1992-1993	UF$_6$
92-1277*	140	—	1993	UF$_6$
92-1282*	250	—	1993	
92-1283B*	45	—	1993	UF$_6$
90-1196	—	60 per year	1995 on	
91-1152	—	2,700	1995-2001	
92-1016	—	170 per year	1996-2006	
92-1288*	—	45	1994	
TOTAL	**480**			
INACTIVE	*none reported*			

* New or revised since last month.

1 For delivery within one year, measured from the date of this Report. This category excludes material deliverable within one year under other than spot or near-term contracts.

2 For delivery beyond one year, measured from the date of this Report.

Active Projects reclassified as Inactive since last month: *none*

Active Projects removed since last month: 92-1152B, 92-1257B

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MARKET VALUES EXPRESSED IN SELECTED CURRENCIES[1]

Australia to Hungary	Australia (dollar)	Belgium (franc)	Canada (dollar)	China (renminbi)	CSFR (koruna)	EC (ecu)	Finland (markka)	France (franc)	Germany (mark)	Hungary (forint)
EXCHANGE VALUE										
per pound equivalent U_3O_8 as Concentrates										
This Month (Sept 30, 1992)	**12.27**	**254.88**	**10.91**	**48.58**	**231.61**	**6.34**	**39.23**	**41.86**	**12.38**	**665.53**
Last Month (Aug 31, 1992)	11.25	232.93	9.62	43.75	210.10	5.58	31.13	38.46	11.29	597.71
12 Months Ago (Sept 30, 1991)	10.51	287.97	9.50	45.16	—	6.82	34.06	47.63	13.97	—
per kg U as Concentrates										
This Month (Sept 30, 1992)	**31.90**	**662.63**	**28.37**	**126.30**	**602.14**	**16.47**	**102.00**	**108.84**	**32.18**	**1,730**
Last Month (Aug 31, 1992)	29.25	605.56	25.01	113.74	546.23	14.52	80.92	99.99	29.34	1,554
12 Months Ago (Sept 30, 1991)	27.33	748.65	24.71	117.41	—	17.73	88.55	123.82	36.32	—
UF_6 VALUE										
per kg U as UF_6										
This Month (Sept 30, 1992)	**36.47**	**757.36**	**32.42**	**144.35**	**688.22**	**18.83**	**116.58**	**124.40**	**36.78**	**1,978**
Last Month (Aug 31, 1992)	33.89	701.68	28.98	131.79	632.92	16.82	93.77	115.86	34.00	1,801
12 Months Ago (Sept 30, 1991)	31.91	874.19	28.85	137.10	—	20.71	103.40	144.58	42.41	—
TRANSACTION VALUE										
per pound equivalent U_3O_8 as Concentrates										
This Month (Sept 30, 1992)	**11.15**	**231.58**	**9.91**	**44.14**	**210.44**	**5.76**	**35.65**	**38.04**	**11.24**	**604.68**
Last Month (Aug 31, 1992)	10.97	227.14	9.38	42.66	204.88	5.45	30.35	37.50	11.01	582.86
12 Months Ago (Sept 30, 1991)	10.89	298.25	9.84	46.78	—	7.06	35.28	49.33	14.47	—
per kg U as Concentrates										
This Month (Sept 30, 1992)	**28.99**	**602.05**	**25.77**	**114.75**	**547.09**	**14.97**	**92.67**	**98.89**	**29.23**	**1,572**
Last Month (Aug 31, 1992)	28.52	590.52	24.39	110.91	532.66	14.16	78.91	97.50	28.61	1,515
12 Months Ago (Sept 30, 1991)	28.31	775.39	25.59	121.61	—	18.37	91.72	128.24	37.62	—
CONVERSION VALUE										
per pound U as UF_6										
This Month (Sept 30, 1992)	**1.96**	**40.78**	**1.75**	**7.77**	**37.06**	**1.01**	**6.28**	**6.70**	**1.98**	**106.48**
Last Month (Aug 31, 1992)	2.10	43.40	1.79	8.15	39.15	1.04	5.80	7.17	2.10	111.38
12 Months Ago (Sept 30, 1991)	1.94	53.14	1.75	8.33	—	1.26	6.29	8.79	2.58	—
per kg U as UF_6										
This Month (Sept 30, 1992)	**4.33**	**89.91**	**3.85**	**17.14**	**81.70**	**2.23**	**13.84**	**14.77**	**4.37**	**234.76**
Last Month (Aug 31, 1992)	4.62	95.69	3.95	17.97	86.31	2.29	12.79	15.80	4.64	245.54
12 Months Ago (Sept 30, 1991)	4.28	117.15	3.87	18.37	—	2.77	13.86	19.37	5.68	—
SWU VALUE										
per SWU at 0.30% ^{235}U Tails Assay										
This Month (Sept 30, 1992)	**95.37**	**1,981**	**84.80**	**377.54**	**1,800**	**49.24**	**304.91**	**325.34**	**96.18**	**5,172**
Last Month (Aug 31, 1992)	92.24	1,910	78.87	358.69	1,723	45.79	255.20	315.32	92.53	4,901
12 Months Ago (Sept 30, 1991)	83.85	2,297	75.81	360.22	—	54.40	271.68	379.88	111.43	—

[1] Calculated using currency exchange rates for the last business day of the month, as published in *The Wall Street Journal*.

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MARKET REVIEW

MARKET VALUES EXPRESSED IN SELECTED CURRENCIES[1]

Italy to United States	Italy (lira)	Japan (yen)	Netherlands (guilder)	S. Africa (comm. rand)	S. Korea (won)	Spain (peseta)	Sweden (krona)	Switzerland (franc)	Taiwan (dollar)	UK (pound)	USA (dollar)
EXCHANGE VALUE											
per pound equivalent U_3O_8 as Concentrates											
This Month (Sept 30, 1992)	**10,681**	**1,050**	**13.94**	**24.61**	**7,000**	**868.23**	**46.39**	**10.81**	**218.05**	**4.92**	**8.75**
Last Month (Aug 31, 1992)	8,617	989.79	12.72	22.04	6,325	733.02	41.28	10.05	199.88	4.05	8.05
12 Months Ago (Sept 30, 1991)	10,456	1,116	15.75	23.56	6,111	885.80	51.00	12.18	220.08	4.80	8.40
per kg U as Concentrates											
This Month (Sept 30, 1992)	**27,769**	**2,730**	**36.25**	**63.97**	**18,198**	**2,257**	**120.62**	**28.10**	**566.89**	**12.80**	**22.75**
Last Month (Aug 31, 1992)	22,402	2,573	33.08	57.29	16,443	1,906	107.32	26.12	519.65	10.52	20.93
12 Months Ago (Sept 30, 1991)	27,182	2,901	40.95	61.26	15,888	2,303	132.59	31.66	572.16	12.47	21.84
UF_6 VALUE											
per kg U as UF_6											
This Month (Sept 30, 1992)	**31,738**	**3,120**	**41.43**	**73.12**	**20,800**	**2,580**	**137.86**	**32.12**	**647.93**	**14.63**	**26.00**
Last Month (Aug 31, 1992)	25,958	2,982	38.33	66.38	19,052	2,208	124.36	30.26	602.13	12.20	24.25
12 Months Ago (Sept 30, 1991)	31,740	3,388	47.82	71.53	18,552	2,689	154.83	36.97	668.10	14.56	25.50
TRANSACTION VALUE											
per pound equivalent U_3O_8 as Concentrates											
This Month (Sept 30, 1992)	**9,705**	**954.04**	**12.67**	**22.36**	**6,360**	**788.85**	**42.15**	**9.82**	**198.12**	**4.47**	**7.95**
Last Month (Aug 31, 1992)	8,403	965.20	12.41	21.49	6,168	714.81	40.26	9.80	194.91	3.95	7.85
12 Months Ago (Sept 30, 1991)	10,829	1,156	16.31	24.40	6,330	917.43	52.82	12.61	227.94	4.97	8.70
per kg U as Concentrates											
This Month (Sept 30, 1992)	**25,230**	**2,480**	**32.94**	**58.12**	**16,535**	**2,051**	**109.59**	**25.54**	**515.06**	**11.63**	**20.67**
Last Month (Aug 31, 1992)	21,846	2,509	32.26	55.87	16,034	1,858	104.66	25.47	506.74	10.26	20.41
12 Months Ago (Sept 30, 1991)	28,153	3,005	42.41	63.44	16,455	2,385	137.33	32.79	592.59	12.92	22.62
CONVERSION VALUE											
per pound U as UF_6											
This Month (Sept 30, 1992)	**1,709**	**168.01**	**2.23**	**3.94**	**1,120**	**138.92**	**7.42**	**1.73**	**34.89**	**0.79**	**1.40**
Last Month (Aug 31, 1992)	1,606	184.43	2.37	4.11	1,179	136.59	7.69	1.87	37.24	0.75	1.50
12 Months Ago (Sept 30, 1991)	1,929	205.93	2.91	4.35	1,128	163.45	9.41	2.25	40.61	0.89	1.55
per kg U as UF_6											
This Month (Sept 30, 1992)	**3,768**	**370.39**	**4.92**	**8.68**	**2,469**	**306.26**	**16.37**	**3.81**	**76.92**	**1.74**	**3.09**
Last Month (Aug 31, 1992)	3,540	406.61	5.23	9.05	2,598	301.12	16.96	4.13	82.11	1.66	3.31
12 Months Ago (Sept 30, 1991)	4,253	453.99	6.41	9.59	2,486	360.35	20.75	4.95	89.53	1.95	3.42
SWU VALUE											
per SWU at 0.30% ^{235}U Tails Assay											
This Month (Sept 30, 1992)	**83,008**	**8,160**	**108.37**	**191.23**	**54,400**	**6,747**	**360.55**	**84.01**	**1,695**	**38.26**	**68.00**
Last Month (Aug 31, 1992)	70,649	8,115	104.31	180.67	51,854	6,010	338.46	82.37	1,639	33.19	66.00
12 Months Ago (Sept 30, 1991)	83,396	8,901	125.63	187.94	48,745	7,065	406.80	97.14	1,755	38.26	67.00

[1] Calculated using currency exchange rates for the last business day of the month, as published in *The Wall Street Journal*.

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WASHINGTON FOCUS

by Linda L. Gunter

As of October 6, Congress had concluded most of its business; however, although eager to return to their home states to continue campaigning for reelection, Senate action was delayed by a filibuster on the tax bill by Sen. Alfonse D'Amato (R-NY) and a threat of a filibuster by Nevada's Senators over the National Energy Strategy bill (HR 776).

Congress completed work on appropriations for FY 1993 government programs, including the bill which funds DOE and NRC programs. By the end of September, the House and Senate conferees on the Energy bill had worked out an agreement on the variant issues of the two versions of the bill. The House of Representatives approved the Energy bill conference report on October 5, and the Senate approved the report on October 8.

Energy and Water Appropriations Bill

On September 24, the Senate voted to adopt the conference report on the Energy & Water Appropriations bill (HR 5373) and the President signed the bill on October 1. The $22.3 billion bill will fund DOE energy programs for FY 1993, and increase spending on advanced reactor research and development (R&D) and the characterization of Yucca Mountain for spent fuel storage. The bill also will increase funding by $2 million, to $18 million, for high temperature gas-cooled reactor R&D; it will increase funding for R&D on the liquid metal reactor program by $1 million, to $12.5 million. The light water reactor program will receive $58.7 million, the amount requested by DOE, but a reduction from the $65.5 million allocated last year. The advanced light water reactor program will be cut from $56 million to $50 million.

The bill will provide $11 million in FY 1993 to the State of Nevada for the Yucca Mountain spent fuel storage repository. Of the total, $6 million is designated as impact aid for local governments affected by the facility. In allocating the funds to the state, Congress specified that the money could not be spent on lobbying efforts and legal expenses to fight the repository.

After heavy industry pressure, Congress increased the overall high-level nuclear waste budget of HR 5373, composed of money allocated from funds collected from utilities via a millage fee, from $275 million to $375 million. Utilities complained that although the money was being collected, Congress and DOE were reluctant to spend from the fund because it was being used to offset the budget deficit. This reluctance was causing problems for DOE, since its characterization schedule required increased spending in order to meet the 1998 deadline.

The uranium enrichment program was reduced to a budget of $1.361 billion, $30 million less than DOE's request. Nevertheless, DOE plans to raise $1.462 billion for the Treasury in FY 1993 from sales of enrichment services to its customers. The $30 million reduction was taken from the AVLIS program, but strong language was included requiring that predeployment activities not be deprived of funding. For example, the DOE Secretary was directed to select a commercial deployment contractor as soon as possible. Another element of DOE's proposed budget included provisions for collecting an additional millage fee of .33 mil/kWh to begin environmental cleanup at the GDPs. Congress, however, did not authorize this funding mechanism.

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Energy Bill Clears Conference

The energy bill (HR 776) cleared a House-Senate conference committee on October 1, and the compromise version of the bill was approved by the House on October 5 by a vote of 363-60. On October 8, the Senate voted to approve the conference version of the bill, sending the bill to President Bush for his signature.

Provisions included in the bill give the nuclear industry reason to feel somewhat optimistic. Conferees agreed to the nuclear licensing provisions, affirming the Nuclear Regulatory Commission's (NRC) authority as outlined in CFR Part 52, as well as requirements for NRC certification of standardized designs. Compromise was achieved on transmission access and on Public Utility Company Holding Act reform, provisions that probably will lead to restructuring of the US electric utility industry. Controversial provisions limiting off-shore oil drilling and restricting states' authority to set quotas on natural gas output were removed from the bill to ensure final passage.

An unlikely coalition of environmentalists, utilities, labor unions, and uranium mining companies combined to ensure passage (after seven years) of a restructured DOE enrichment program. In the bill's three titles related to the fuel cycle, Title IX creates a government corporation with a five-member Board of Directors. The corporation would be required to price its enrichment services in a business-like fashion and lease the two operating gaseous diffusion plants (GDP) from DOE for six years. The government corporation also would be authorized to convert Russian HEU to reactor fuel. A separate private corporation would be authorized to spend up to $364 million to build and fund AVLIS.

The government corporation would be able to issue stock equal to the book value of the assets transferred to the corporation, with this stock held by the US Treasury. Payment of the corporation's debt would be limited to the proceeds from the sale of stock and dividends. Title IX of the bill provides that Section 161v of the Atomic Energy Act would not be applied to the corporation. The significance of the exemption of the corporation from Section 161v is that the prices charged by the corporation could be lower, since it would not be required to recover its costs through its prices. However, DOE would still have to recover the cost of providing services to the corporation.

Title X creates a decontamination and decommissioning (D&D) fund for the GDPs set at $2.25 billion; annually, the utility D&D payment obligation would be set at $150 million (adjusted for inflation) and the government contribution capped at $330 million. The utility contribution would be included as a fuel cost in rate proceedings, and thus could be considered a pass-through cost.

Most of the House provisions on the uranium mining issues were adopted for the Energy bill as Title X, such as payment for cleanup of mill tailings from the D&D fund. The conferees reportedly dropped provisions that would have deprived uranium companies of the tax depletion allowance on uranium mining properties, after the conferees discovered another mechanism to fund wind and solar tax credits. Finally, Rep. Neil Abercrombie's (D-HI) amendment requiring NRC certification of plutonium casks was amended to allow more time to study the issue.

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INDUSTRY BRIEFS

NRC To Try International Nuclear Event Scale

By a vote of 3-2, the Nuclear Regulatory Commission (NRC) has voted to implement the International Nuclear Event Scale (INES) for a trial period of two to three years. The INES, developed by the International Atomic Energy Agency and the OECD's Nuclear Energy Agency and introduced on a trial basis worldwide several years ago, labels and communicates the relative seriousness of nuclear reactor events and helps put these events into proper perspective. INES has since gained widespread usage, including use by France and Japan, two countries who, like the USA, had developed their own rating scales prior to adopting the INES.

The four-tiered US scale was developed to indicate the level of emergency requirements, whereas the eight-level INES scale was developed to communicate the seriousness of events as follows:

0 – a deviation from normal operations, but with no safety implications.
1 – an anomaly.
2 – an incident.
3 – a serious incident.
4 – an accident without significant off-site risk.
5 – an accident with off-site risk.
6 – a serious accident.
7 – a major accident having extensive health and environmental repercussions.

The NRC is planning workshops in the near future to introduce and explain the INES scale in the USA.

India's Kakrapar 1 Reaches Criticality

India's ninth reactor, Kakrapar 1, achieved criticality on September 3; construction began on the unit in 1985. The 220-MWe pressurized heavy water reactor, located 330 kilometers north of Bombay in the state of Gujarat, is the first in the world to use thorium oxide bundles in the core, instead of depleted uranium, for "power flattening".

India's tenth reactor, Kakrapar 2, is more than 90-percent complete and is expected to achieve criticality by the second half of 1993; it should reach commercial operation in 1994. Four more nuclear power plants are currently under construction in India.

◆ ◆ ◆

Seabrook Sets Record

After setting a record of 325 days of continuous operation, the Yankee Atomic Power Group's Seabrook nuclear plant, located in New Hampshire, shut down on September 7, 1992, for its second scheduled refueling. The plant surpassed the old record of 215 days for second-cycle operation of a Westinghouse-designed plant set by Southern Company's Farley reactor in Alabama. Roughly one-third of Seabrook's core will be replaced during this refueling process, as the reactor moves to 18-month cycles.

Darlington 2 To Resume Operation

After receiving approval from the Canadian Atomic Energy Control Board on September 4, Ontario Hydro restarted Darlington 2 on September 8 and was operating the unit at thirty percent capacity by September 25.

The 881-MWe pressurized heavy water reactor began commercial operation in October 1990, but was shut down in January 1991 due to damage to several fuel bundles. After extensive evaluation, use of five-blade impellers in the primary coolant pumps was determined to have created a resonant frequency that led to vibration of the fuel bundles. The pumps were retrofitted with seven-blade impellers to solve the problem. The pumps at Darlington 1 already have been retrofitted with the new impellers and the unit is operating near full power. Unit 3 is scheduled to begin commercial operation this autumn, and Unit 4, next spring.

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RECENT DEVELOPMENTS

TEPCO Experiences Emergency Shutdown

On September 29, Tokyo Electric Power Company experienced an emergency shutdown at its Fukushima I nuclear power station. Unit 2, one of the 760-MWe (net) boiling water reactors at the station, located 150 miles northeast of Tokyo, was operating at full power when a human error caused one of two primary high-pressure condenser pumps (HPCP) and one secondary HPCP to be momentarily shut off.

The secondary pump was off-line for a routine inspection, after which its power supply panel was replaced incorrectly. The error resulted in a message sent to the main computer indicating that the pump was in use, when it actually was turned off. The computer proceeded to take one of the primary pumps off-line, in accordance with specifications that limit the number of operating HPCPs to no more than two. The computer's action, in turn, caused the other primary HPCP to stop because of low delivery pressure. As a result, the fuel rod water level dropped approximately three meters, initiating activation of the automatic emergency core cooling system.

Since the reactor experienced no leaks of either coolant or radioactivity, the incident was preliminarily classified at zero, the lowest level on the International Nuclear Event Scale, indicating no safety implications to either employees or the public. TEPCO currently is undertaking measures to safeguard against repetition of the problem.

General Atomics Sells Powder River Basin

On August 10, General Atomics (GA) announced that it had sold its Powder River Basin uranium properties to Pathfinder Mines for an undisclosed price. GA originally paid $1.6 million to the Tennessee Valley Authority (TVA) for the properties in a 1991 public auction. Pathfinder was one of three other bidders in that auction for the properties, estimated to contain reserves of five to seven million pounds equivalent U_3O_8.

◆ ◆ ◆

South Korea Buys Two More CANDU Reactors

On September 18, 1992, Atomic Energy of Canada Limited (AECL) announced that it had sold two more of its CANDU reactors to Korea Electric Power Corporation (KEPCO). Both heavy water reactors (HWR), using AECL's CANDU 6 design, will be built at KEPCO's Wolsong station, located north of Puson on South Korea's east coast. KEPCO currently operates one 629-MWe CANDU HWR (Unit 1) at the Wolsong station and has another under construction. Unit 2 is scheduled to commence operation in 1997, and the newly purchased Units 3 and 4 will begin commercial operation in 1998 and 1999.

The Korean nuclear program currently includes nine operating reactors totalling 7,243 MWe of capacity, with one reactor under construction and six more in the planning stage. South Korea's long-term plans call for 27 operating reactors by the year 2006.

SKI Orders Precautionary Measures

On September 17, the Swedish Nuclear Safety Inspectorate (SKI) announced that the country's five oldest nuclear plants will not be allowed to operate until corrections are made to each plant's emergency core cooling system (ECCS).

These requirements stem from an an incident at Barsebäck 2, where a piece of pipe insulation fell into a cooling system containment pool, threatening to clog the inlet strainers. While designers had foreseen this possibility, they anticipated having sufficient time to clear the clog before it became severe; however, the clogging occurred much sooner than expected. Had the plant been operating at full power, plant operators would not have had enough time to reverse the flow of coolant and flush out the blockage. Fortunately, at the time of the incident, the Barsebäck plant was operating at marginal power; therefore, interruption of proper circulation of the coolant was not as critical.

SKI is calling for each utility to prove the ECCS currently in place is highly reliable and would ensure safety if such an event were to recur. All five of Sweden's older-generation boiling water reactors (Barsebäck 1 and 2, Ringhals 1, and Oskarshamn 1 and 2) are presently shut down to address the issue and will remain shut down temporarily until precautionary steps can be taken.

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ORGANIZATION OF THE GERMAN NUCLEAR INDUSTRY

Corporate ownership within the German nuclear industry has evolved constantly during the last decade, and recent acquisitions and mergers, reunification of the country, as well as preparation for a unified European power market, have led to many significant changes during the past two years. The country's nuclear industry continues to struggle under an increasingly anti-nuclear political environment, yet nuclear power provided more than one-third of Germany's total electricity generation in 1991.

As in many countries, particularly in western Europe, many German companies involved in different facets of the nuclear industry are interrelated. Usually as a means of horizontal or vertical integration, the country's nuclear utilities own, directly or indirectly, shares in uranium mining projects; conversion, enrichment, and fabrication companies; or other utilities' nuclear power plants. The utilities own partial interests in companies in supporting industries as well, including transportation firms, waste management companies, uranium broker/traders, and nuclear equipment manufacturers (see *Fold-Out Diagram*). While the majority of the companies owned are German, numerous investments are made in non-German firms also.

MAJOR UTILITIES AND CORPORATIONS

Germany's nuclear industry is dominated by only a few major firms: RWE AG, an energy, mining, and construction company, and owner of RWE Energie AG, Germany's largest electric utility; PreussenElektra AG, the second-largest utility, owned by energy giant Veba AG; and Siemens AG, Germany's primary electrical equipment supply corporation. The country's other major nuclear utilities include Bayernwerk AG (BAG), Vereinigte Electrizitätswerke Westfalen AG (VEW), Badenwerk AG, Energie-Versorgung Schwaben AG (EVS), and Hamburgische Electricitäts-Werke AG (HEW). All of these companies are located in and provide service to western Germany. Utility service to eastern Germany is supplied by Vereinigte Energiewerke AG (VEAG), the state-owned corporation. Presently, VEAG is owned by the government, with RWE Energie, PreussenElektra, and BAG controlling operating interests of 35 percent, 35 percent, and 30 percent, respectively. Over time, VEAG and other east German regional utilities will be sold, primarily to existing west German utilities.

RWE AG

RWE has emerged in the last decade to become one of Germany's major corporations. Originally an electric utility based in Essen, Rheinisch-Westfälisches Elektrizitätswerk (officially renamed RWE AG in early 1990), has transformed itself in the past several years into an energy, mining, and construction conglomerate with annual net sales of nearly DM50 billion (US$33 billion).

The company's energy division is led by RWE Energie AG, Germany's largest utility and the fourth-largest utility in Europe, based on total power sold. RWE Energie owns and operates several reactors: 100 percent of the two-unit Biblis station (a 1,146-MWe pressurized water reactor and a 1,240-MWe PWR), and the presently shut down 1,219-MWe Mülheim-Kärlich PWR. RWE Energie also operates the Gundremmingen station (containing two 1,240-MWe boiling water reactors), which is owned by Kernkraftwerk Gundremmingen Verwaltungesellschaft (KGV). KGV leases the power generated by the station back to RWE Energie and BAG. RWE Energie owns 75 percent of KGV, and BAG owns the other 25 percent.

The Mülheim-Kärlich reactor, which began commercial operation in 1987, has been shut down since 1988, due to legal technicalities regarding its operating license. The reactor's license was found to be invalid because the reactor is not sited precisely in the location indicated in the original construction documents. A new license was issued, but was suspended by the ruling administrative court, which also ruled out further appeals. This latter decision was reversed, however, and an appeal of the suspension was finally allowed. If the appeal is successful, RWE hopes to resume operation of the reactor in 1993. In a separate suit, the Mainz district court ruled that the state of Rhineland-Palatinate was partially responsible for the

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licensing deficiencies that led to the extended shutdown of the reactor, and must compensate RWE Energie for half the costs it has incurred while the reactor has been down. The state could be liable for as much as DM500 million (US$332 million), although it has appealed the decision. Nevertheless, the existing license for Mülheim-Kärlich is just a trial operational license, requiring RWE Energie to obtain a full operating license by early 1994. This necessity could be troublesome, since the Rhineland-Palatinate government responsible for issuing the license is now controlled by the anti-nuclear Social Democratic Party.

RWE Energie owns a controlling interest (68.85 percent) in Schnell-Brüter-Kernkraftwerkgesellschaft (SBK), a company involved in the design, construction, and operation of fast breeder reactors (FBR). SBK owns 100 percent of the now-abandoned Kalkar FBR project and a 16-percent share in NERSA, a consortium of European utilities that owns the Superphénix FBR in France, now shut down.

Rheinbraun AG, based in Cologne, is the principal company of RWE's Mining and Raw Materials Division. Rheinbraun is western Germany's largest producer of brown coal, the country's most important domestic fuel source. Brown coal-fired plants generated 29 percent of the electricity produced throughout Germany in 1991, and more than 80 percent of the electricity generated in eastern Germany. RWE Energie's expertise in the use of brown coal to generate electricity has led it to invest heavily in renovating the power plants of eastern Germany.

In addition to its coal activities for RWE Energie, Rheinbraun owns a 50-percent interest in the uranium mining firm, Uranerzbergbau GmbH. Through its wholly owned subsidiaries, Uranerz owns a 33.3-percent interest in both the Rabbit Lake and Key Lake uranium projects in Canada, and a 25-percent share of Crow Butte in the USA. Rheinbraun also directly owns a 6.25-percent interest in Energy Resources of Australia (ERA).

RWE now owns 100 percent of Nukem GmbH, as a result of its third quarter 1990 purchase from Metallgesellschaft AG of the remaining 10-percent interest. Nukem is primarily a nuclear services company, although several of its businesses, such as its fuel manufacturing division, have been sold in recent years. NUKEM also is a uranium trading and brokerage firm, and controls, through its wholly owned subsidiary Cycle Resources Investment Corporation, a 50-percent interest in the Sheep Mountain Partners uranium project in the USA (a joint-venture with US Energy Corporation).

RWE also controls a 37.5-percent interest (0.5 percent through Nukem) in Uranit GmbH, the German uranium enrichment company. Uranit owns 50-percent of MAN-Uranit, a manufacturer of uranium enrichment centrifuges, as well as one-third of Urenco. Urenco, which is also one-third owned by both BNFL of the UK and UCN of The Netherlands, is one of the world's primary suppliers of enrichment services. Among its three plants, Urenco operates a centrifuge enrichment facility at Gronau, Germany with an annual capacity of 500 thousand SWU.

PreussenElektra AG

PreussenElektra is the eighth-largest utility in Europe and is part of energy conglomerate Veba AG. Veba is a Düsseldorf-based, private-stock company with extensive interests in electricity supply, chemicals, oil, trade, and transportation.

PreussenElektra is one of the principal companies of the Veba group. Based in Hannover, the utility provides wholesale electricity to the states of Schleswig-Holstein and Lower Saxony, as well as portions of the states of Northrhein-Westphalia and Hesse. This service territory, covering much of central and northwestern Germany, includes more than 15 million people. PreussenElektra primarily uses nuclear power and coal-fired plants to generate its electricity; nuclear power accounts for approximately two-thirds of its electric energy. It owns and operates several reactors, including Unterweser, a 1,230-MWe PWR; Würgassen, a 640-MWe BWR; Brokdorf, a 1,326-MWe PWR, Stade, a 640-MWe PWR; and Grohnde, a 1,300-MWe PWR. The Grohnde station, 50-percent owned by the utility Gemeinschaftskraftwerk Weser GmbH (GKW), ranked second in the world in 1991 in total power generated, producing 9,961 GWh (**Table 1**). PreussenElektra also owns interests in the Krümmel and Brunsbüttel nuclear stations that are operated by HEW.

In addition to its domestic electricity production, PreussenElektra owns a 10.5-percent interest in the Swedish utility Sydkraft AB, as a means to improve its access to electricity supplies from Scandinavia.

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Table 1
NUCLEAR POWER UNITS IN GERMANY

Units In Operation

Unit	Lead Utility or Fuel Buyer	Capacity (MWe net)	Type	COD [1]	1991 Capacity Factor (percent)	Total 1991 Electricity Generation (GWh net)
Biblis A	RWE [2]	1,146	PWR	1975	70	6,985
Biblis B	RWE	1,240	PWR	1977	37	3,974
Brokdorf	PREAG [3]	1,326	PWR	1986	81	9,459
Brunsbüttel	HEW [4]	771	BWR	1977	57	3,826
Emsland	VEW [5]	1,242	PWR	1988	94	10,263
Grafenrheinfeld	BAG [6]	1,235	PWR	1982	90	9,734
Grohnde	PREAG	1,300	PWR	1985	87	9,961
Gundremmingen B	RWE	1,240	BWR	1984	75	8,099
Gundremmingen C	RWE	1,248	BWR	1985	75	8,201
Isar 1	BAG	870	BWR	1979	89	6,750
Isar 2	BAG	1,310	PWR	1988	85	9,767
Krümmel	HEW	1,260	BWR	1984	70	7,755
Mülheim-Kärlich	RWE	1,219	PWR	1987	—	—
Neckarwestheim 1	GKN [7]	795	PWR	1976	80	5,540
Neckarwestheim 2	GKN	1,230	PWR	1989	89	9,605
Obrigheim 1	KWO [8]	340	PWR	1969	35	1,049
Philippsburg 1	BW/EVS [9]	864	BWR	1980	81	6,166
Philippsburg 2	BW/EVS	1,268	PWR	1985	89	9,863
Stade	PREAG	640	PWR	1972	41	2,288
Unterweser	PREAG	1,230	PWR	1979	60	6,476
Würgassen	PREAG	640	BWR	1975	73	4,105
TOTAL		**22,414**		*(1991 Average:*	**71)** [10]	**139,866**

Units Under Construction

Unit	Lead Utility or Fuel Buyer	Capacity (MWe net)	Type	COD [1]	Percent Complete
Kalkar	SBK [11]	295	LMFBR	Indefinite	100

[1] COD = Commercial Operation Date
[2] RWE = RWE-Energie AG
[3] PREAG = PreussenElektra AG
[4] HEW = Hamburgische Elektricitäts-Werke AG
[5] VEW = Vereinigte Elektrizitätswerke Westfalen AG
[6] BAG = Bayernwerk AG
[7] GKN = Gemeinschaftskernkraftwerk Neckar GmbH
[8] KWO = Kernkraftwerk Obrigheim GmbH
[9] BW/EVS = Badenwerk AG/Energie-Versorgung Schwaben AG
[10] Average does not include those units that entered commercial operation or were retired during 1991.
[11] SBK = Schnell-Brüter Kernkraftwerksgesellschaft mbH

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By the end of the year, PreussenElektra plans to complete its second 1,200-MW above-ground transmission connection to Sweden via Denmark. It also plans to begin installing a direct, 600-MW underwater cable through the Baltic Sea, further integrating the electrical supply systems of the two countries.

In the non-nuclear area, Veba announced a major organizational restructuring in early 1992 that placed Veba Kraftwerk Ruhr (VKR), a conventional-power utility, as a wholly owned subsidiary of PreussenElektra. VKR formerly had been separate from PreussenElektra, but now will operate PreussenElektra's 6,000 MW of conventional power capacity. When added to the 672 MW of capacity it operates for RWE Energie and its own 4,191 MW of capacity, VKR has become one of Germany's major utility divisions, consuming more hard coal for electricity generation than any other company.

Like other German nuclear utilities, PreussenElektra has integrated through the industry. It owns a 37.5-percent interest in Uranit, and also owns a 23.7-percent interest in Gesellschaft für Nuklear-Service mbH (GNS), a nuclear transportation and radioactive waste management company.

Urangesellschaft mbH

In the most significant organizational change in the German uranium supply industry this year, Cogema, the French fuel cycle conglomerate, purchased a 70-percent interest in the German uranium trading company Urangesellschaft mbH (UG), from Veba and its affiliates, including PreussenElektra. UG previously had been owned by Veba, PreussenElektra, and Steag AG. The purchase was first announced in January 1992 and was concluded in June. In late August, Cogema announced that it was merging UG with its own uranium marketing intermediary, Interuran (which was 75-percent owned by Cogema). The companies have been merged into one company (still named UG), in which Cogema's wholly owned German subsidiary, Cogema Uran Services GmbH, owns 69.4 percent. PreussenElektra and Steag each own 10.3 percent, and former Interuran shareholders, Badenwerk and EVS, each own five percent.

UG will continue its uranium trading activities, as well as Interuran's long-term marketing efforts. UG also will take the 25-percent interest in the Highland uranium project in the USA that was owned by Interuran. This furthers UG's extensive uranium mining interests, which include shares in Rössing Uranium Ltd. of Namibia, ERA and the Yeelirrie project in Australia, the Kiggavik project in the Northwest Territories of Canada, the Gas Hills project in the USA, and Somair in Niger. Interuran's exclusive agreement with the German Ministry of Economics to market Wismut uranium has now been assumed by Cogema. (Wismut SDAG is the former East German national uranium producer now owned by the German government.) UG also has a joint-venture with Techsnabexport of Russia, known as Internexco, that markets uranium and related services from Russia in much of Europe.

Siemens AG

Siemens AG is a major diversified corporation, having activities in such areas as engineering, construction, power generation and transmission, data and information systems, and semiconductors. Due to an aggressive acquisition policy and the tremendous opportunities afforded by German unification, Siemens recently has experienced very strong growth, registering more than DM73 billion (US$48.6 billion) in sales in 1991, with new orders worth DM83 billion (US$54.8 billion) placed during the same year.

One of Siemens' primary divisions is the Power Generation Group, known as KWU (formerly Kraftwerk Union AG). The KWU division oversees all aspects of Siemens construction work on both nuclear and conventional power plants. It also is actively involved in the nuclear fuel fabrication business. Siemens' Brennelementewerk Hanau (BWH) is Germany's primary fuel fabricator of uranium and mixed-oxide (MOX) fuel, supplying more than two-thirds of the fuel elements to German reactors. BWH recently has faced several challenges regarding safety issues raised by anti-nuclear groups. In late December 1991, BWH was forced to shut down its 800 metric ton-per-year uranium fuel fabrication line, when a hydrogen explosion at a nearby non-nuclear plant led to a safety investigation of the hydrogen systems at BWH. Less than a month later, the uranium fabrication line returned to full operation, once the safety of the hydrogen systems were confirmed. However, the MOX fuel facility remains off-line, shut down since June 1991 following a contamination incident at the plant. While the cause of the incident has been determined and systems have been put in place to prevent its recurrence, the MOX line

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remains shut down, due to challenges to its operating license. The Federal Constitutional Court has heard arguments to determine if the present operating license for the existing MOX plant is valid and if the facility can resume operation, although the case is still pending. Additionally, BWH has been constructing a new MOX facility at the same location. It is more than 90-percent complete, but the anti-nuclear Social Democratic Party controls the state government of Hesse; therefore, the scheduled 1993 operation date for the plant, with an annual capacity of 130 metric tons heavy metal, likely will be postponed due to delays in licensing.

In addition to the facilities at Hanau, Siemens also operates three other fabrication facilities, including a 400-MT BWR fuel facility at Karlstein, Germany. The wholly owned US subsidiary, Siemens Capital Corporation, owns Siemens Power Corporation (SPC), which operates a 700 MT-per-year UO_2 conversion and fabrication plant at Richland, Washington. SPC, in turn, owns Advanced Nuclear Fuels GmbH (ANF), a fabricator that operates a 400 MT-per-year facility at Lingen, Germany. A new UO_2 conversion line is under construction at the Lingen site and is scheduled for completion during first half 1993. SPC is responsible for coordinating and managing uranium supply and plant loading schedules at both plants.

Siemens also owns a 50-percent interest in Nuklearer Versicherungsdienst GmbH (NVD), a fuel cycle insurance company. Nukem owns the other 50 percent of NVD.

In addition to its fabrication business and its primary activities of designing and providing nuclear steam supply systems and reactors, Siemens has formed a joint venture with Framatome, the French nuclear reactor vendor, called Nuclear Power International (NPI). The joint venture was established in April 1989 to coordinate marketing and development of the companies' common PWR technology throughout the world. NPI has submitted, or is preparing, proposals to supply PWRs to several countries, including Hungary, China, India, Taiwan, and Indonesia. The proposals can be for joint ventures, turnkey construction projects, or simply provisions of technology and expertise to construct a reactor with as much local involvement as possible. NPI is developing a family of standardized reactors, ranging in size from 600 MWe to 1,400 MWe, to market as a common product of the joint-venture partners.

Bayernwerk AG

The third company of Germany's "Big Three" utilities is Bayernwerk AG. This Munich-based corporation services the state of Bavaria and other areas of southeastern Germany. BAG is majority-owned by the state of Bavaria and several counties in the region. VIAG AG, a private industrial company with interests in chemicals and aluminum production and fabrication, owns the balance of 38.8 percent. BAG operates three reactors and has a minority interest in two other reactors for the nuclear portion of its electricity supply base. BAG operates and owns 100 percent of the 1,235-MWe PWR at Grafenrheinfeld. This plant recently was praised by an IAEA Operations Safety Review Team (OSART) following a visit in December 1991. The plant, labeled "impressive" and "well designed and well managed", has an average lifetime availability factor of nearly 85 percent. BAG also operates and owns a 50-percent interest of Unit 1 at the Isar nuclear station, an 870-MWe BWR; it operates and effectively controls a 50-percent interest at Isar 2 (a 1,310 MWe PWR) as well. A local utility, Isar-Amperwerke AG, owns the other 50 percent of Unit 1 and 25 percent of Unit 2. BAG also owns 25-percent of the Gundremmingen nuclear station, sharing the twin 1,240-MWe BWR station with RWE Energie.

VEW

Dortmund utility VEW services a densely populated area in Germany's industrial Ruhr region, situated between the service areas of the country's two largest utilities, RWE Energie and PreussenElektra (**Figure 1**). VEW owns 75 percent of the Emsland nuclear station, a 1,242-MWe PWR that generated 10,263 GWh in 1991, more than any other reactor in the world. VEW also owns a 31-percent interest in Hochtemperatur-Kernkraftwerk GmbH (HKG), the owner/operator of THTR-300, Germany's prototype thorium high-temperature gas-cooled reactor. After numerous failed requests to the federal government for funding to continue operating the reactor, HKG applied for a decommissioning license and shut down THTR-300 in 1991, when its supply of fuel was depleted.

Among VEW's diversified interests is a thirty-percent share in Ruhrkohle AG, Germany's largest hard coal producer. Ruhrkohle (37-percent owned by Veba) owns 71 percent of Steag, who, in turn, owns 10.3 percent of UG.

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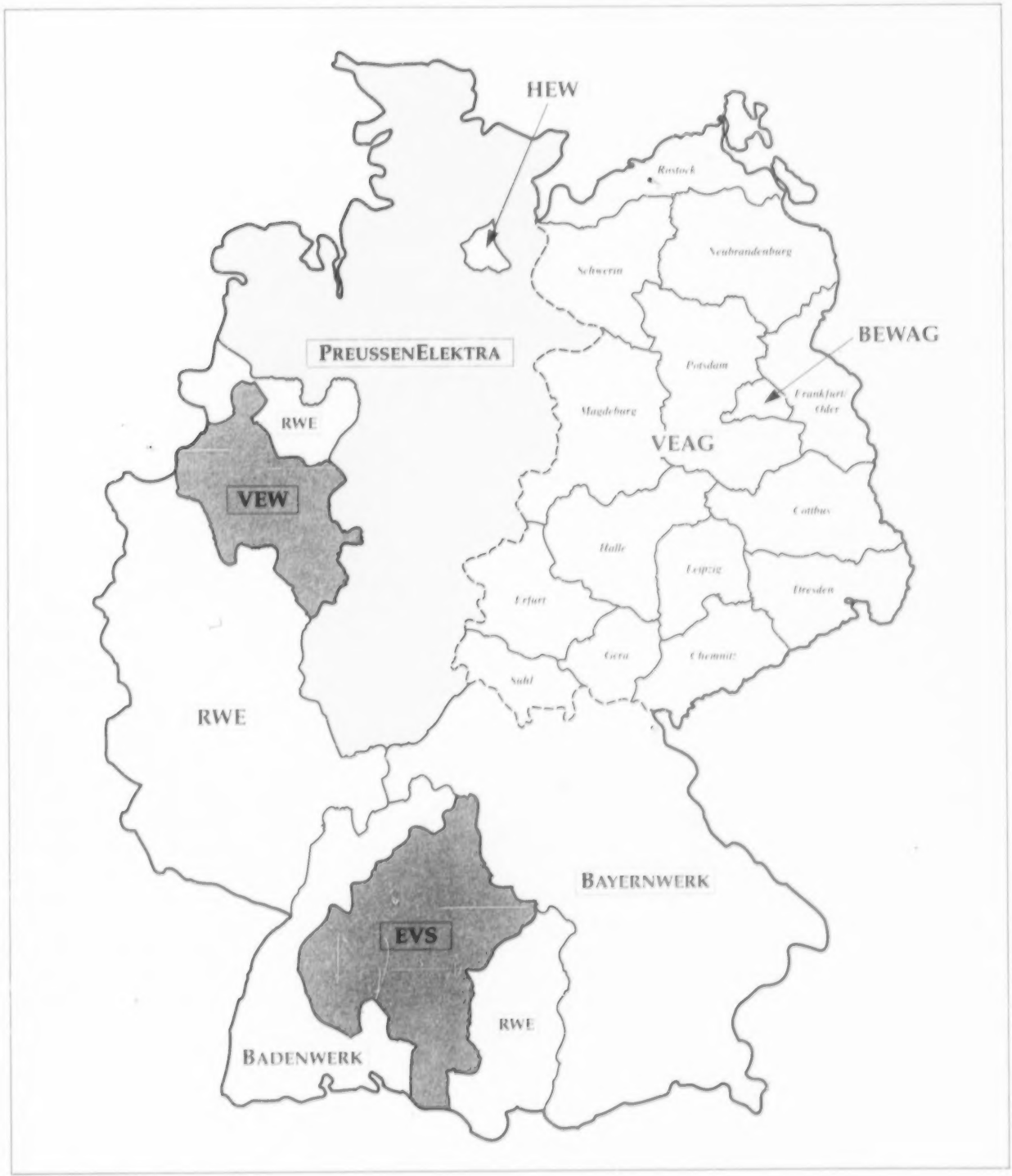
Figure 1
UTILITY SERVICE REGIONS IN GERMANY



Badenwerk AG

From Karlsruhe, the utility Badenwerk AG services southwestern Germany. Owned by the state of Baden-Württemberg, as well as regional hydroelectric utilities, private companies, and private shareholders, Badenwerk has taken advantage of its common borders with France and Switzerland, securing interests in nearby reactors beyond the boundaries of Germany. Badenwerk owns a 7.5-percent share of the 990-MWe BWR at Leibstadt, Switzerland, and also has the rights to a 17.5-percent share of the electricity production from Electricité de France's (EdF) two-unit Fessenheim station and a five-percent share of the production from EdF's Cattenom station. Additionally, Badenwerk has a long-term baseload power contract with EdF that stretches through the year 2015. The contract has allowed Badenwerk to postpone a decision on construction of a new baseload power plant until after the year 2000, despite a 2.7 percent annual growth rate in power demand. Badenwerk estimates that as much as 20 percent of its power will be imported from France or Switzerland by the year 2001. Presently, 57.5 percent of Badenwerk's electricity supply is generated by nuclear power.

Badenwerk's interests extend to domestic nuclear stations as well. It owns 50 percent of Kernkraftwerk Philippsburg (KKP), which operates a 864-MWe BWR and a 1,268-MWe PWR, and 28 percent of the Obrigheim 340-MWe PWR, operated by EVS. The Obrigheim station has had several challenges to its license and was forced to shutdown in mid-1990, the result of a Mannheim Administrative Court ruling stating the plant could not operate on the basis of its preliminary operating license issued in 1968. However, in June 1991, the Federal Administrative Court overturned the lower court's ruling, concluding that the initial operating license, combined with its eight regulatory appendices, allowed for continued operation of the plant; however, the high court also ruled that the station could not continue to operate indefinitely on the basis of its preliminary license. The plant resumed operation in August 1991, and in August 1992, Baden-Württemberg's Minister of Environment issued Obrigheim an operating license that was contingent upon completion of a probabilistic safety analysis prior to the end of 1993. The analysis must be completed and approved or Obrigheim's operating license could be revoked.

Badenwerk continues to look for ways to cooperate with other companies to secure power supplies and to become a major factor in Germany's electricity sector. The company is actively pursuing ownership interests in the regional utilities of eastern Germany. Badenwerk and EVS, who attempted to merge in 1989 but were prohibited by the federal government, have resumed discussions on that issue, since conditions in the German power sector have changed significantly following reunification. The two utilities likely will propose a merger in the near future, creating another large utility in southern Germany. In the long-term, Badenwerk may seek closer cooperation with BAG as well.

EVS

The other major southern German utility is the Stuttgart-based Energie-Versorgung Schwaben AG. EVS owns a fifty-percent interest in the Philippsburg station (shared with Badenwerk), and 35 percent of the Obrigheim station, which it operates. EVS' share of power produced at these two stations constitutes almost 50 percent of the utility's total annual electricity generation. EVS recently signed a new long-term contract with the Austrian utility Tiroler Wasserkraftwerke for exchange of electricity supplies. The Austrian utility will provide 350 MW of peak-load capacity to EVS, and in return, EVS will supply a reciprocal amount of base-load capacity. The contract extends through the year 2017. EVS also owns a small interest in Gemeinschaftskernkraftwerk Neckar GmbH (GKN), the operating utility of the Neckarwestheim station. EVS owns a five-percent interest in UG, acquired as the result of the merger of UG and Interuran.

HEW

Hamburgische Electricitäts-Werke AG provides electricity to the city of Hamburg and the surrounding region in northern Germany. Shares of HEW stock are publicly traded on the regulated share markets of Frankfurt, Hannover, and Amsterdam. Hamburger Gesellschaft für Beteiligungsverwaltung mbH, a wholly owned subsidiary of the city of Hamburg, controls 71.4 percent of the HEW shares.

HEW owns interests in four German nuclear power stations and operates two of those stations. The company owns 20 percent of the Brokdorf station and 33.3 percent of the Stade station, both of which are operated by

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OVERSIZE FOLDOUT(S) FOUND HERE IN THE PRINTED EDITION OF THIS VOLUME ARE FOUND FOLLOWING THE LAST PAGE OF TEXT IN THIS MICROFICHE EDITION.

SEE FOLDOUT NO 1

Legend for Diagram
GERMAN NUCLEAR INDUSTRY

Abbreviation	Full Name (description)
AG	Aktiengesellschaft (incorporated company)
ANF	Advanced Nuclear Fuels GmbH (fabricator)
BAG	Bayernwerk AG (utility)
BNFL	British Nuclear Fuels plc (UK fuel cycle company)
BWH	Brennelementewerk Hanau (uranium and MOX fuel fabrication)
EVS	Energie-Versorgung Schwaben AG (utility)
GfE	Gesellschaft für Energiebeteiligung
GKH	Gemeinschaftskraftwerk Hattingen GmbH
GKN	Gemeinschaftskernkraftwerk Neckar GmbH (utility)
GKW	Gemeinschaftskraftwerk Weser GmbH (utility)
GmbH	Gesellschaft mit beshränkter Haftung (limited liability company)
GNS	Gesellschaft für Nuklear-Service mbH (transportation and radioactive waste disposal)
HEW	Hamburgische Electricitäts-Werke AG (utility)
HKG	Hochtemperatur - Kernkraftwerk GmbH (owner/operator of THTR-300)
KGV	Kernkraftwerk Gundremmingen Verwaltungesellschaft
KKL	Kernkraftwerk Leibstadt AG (Swiss utility)
KKP	Kernkraftwerk Philippsburg GmbH (utility)
KWO	Kernkraftwerk Obrigheim GmbH (utility)
KWU	Siemens Power Generation Group (formerly Kraftwerk Union AG)
NERSA	Centrale Nucléaire Européenne à Neutrons Rapides SA (European utility consortium)
NPI	Nuclear Power International (nuclear ir dustry marketing joint venture)
NVD	Nuklearer Versicherungsdienst GmbH (fuel cycle insurance company)
NWE	Neckarwerke Esslingen AG (utility)
OEW	Zweckverband Oberschwäbische Elektrizitätswerke GmbH (association of municipal hydroelectric utilities)
RWE	RWE AG (parent company of the utility RWE-Energie)
SBK	Schnell-Brüter-Kernkraftwerksgesellschaft mbH (breeder reactor management company)
SPC	Siemens Power Corporation (US fabricator)
THTR-300	Thorium high-temperature gas-cooled reactor
TWS	Technische Werke der Stadt Stuttgart
UCN	Ultra-Centrifuge Nederlands N.V. (Dutch uranium enrichment corporation)
UG	Urangesellschaft mbH (uranium trader with mining interests)
Uranit	Uran-Isotopentrennungs GmbH (uranium enrichment company)
VEAG	Vereinigte Energiewerke AG (utility)
VEW	Vereinigte Elektrizitätswerke Westfalen AG (utility)
VIAG	VIAG AG (aluminum and chemical company)
VKR	Veba Kraftwerke Ruhr AG (non-nuclear German utility)
ZEAG	Zement Electricitätswerk Heilbronn AG (cement company)

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PreussenElektra, whose service territory surrounds HEW's service area. HEW owns a 50-percent interest in the Krümmel station and operates the 1,260-MWe BWR; it owns a 66.7-percent share and operates the 771-MWe BWR at Brünsbuttel as well.

GKN

Gemeinschaftskernkraftwerk Neckar GmbH is owned by a group of regional utilities and distributing companies, as well as the German federal railroad. GKN operates the two-unit Neckarwestheim station that consists of Unit 1, a 795-MWe PWR that began operation in 1976, and Unit 2, a 1,268-MWe PWR that began commercial operation in 1989. Unit 2 is the last of three Convoy PWRs designed and built in Germany by Siemens' KWU division.

Another owner of GKN is the utility EVS, which holds a 9.1-percent interest based on nominal capital invested. Other owners include the regional companies of Neckarwerke Esslingen AG (40.9 percent) and Technische Werke der Stadt Stuttgart (29.1 percent). The remaining 2.7 percent interest is held by ZEAG, a local cement company. Interestingly, ZEAG previously owned and operated a rock quarry at the location of Neckarwestheim 1, and when approached by GKN to purchase the site, ZEAG negotiated to join as a participant in the project. All of the owners, except EVS, participate in both units; EVS participates only in Unit 2.

EASTERN GERMANY

Prior to German unification in October 1990, western utilities debated how to integrate the electrical generation sectors of each country. Now, two years later, the debate continues and nothing has been finalized. Presently, the utility Vereinigte Energiewerke AG (VEAG) is responsible for all power generation and distribution in eastern Germany, except Berlin. VEAG is 100-percent owned by the Treuhandanstalt, the trust agency established to handle the eventual privatization of all businesses and property of the former East Germany.

Following reunification, RWE Energie, PreussenElektra, and Bayernwerk proposed an ownership structure in which they would share ownership of VEAG. However, some of the smaller west German utilities objected to being shut out, and the proposal was then modified to have the Big Three utilities split 75 percent of VEAG, and the five smaller west German utilities (Badenwerk, VEW, EVS, HEW, and BEWAG—the west Berlin utility) split the remaining 25 percent (**Table 2**). The Big Three utilities have considered selling up to 15 percent of their 75-percent share to non-German utilities. Several utilities have expressed interest, including both US and UK utilities, but the one most actively pursuing the option is EdF. The sale to EdF or other non-German entities would be contingent on the Big Three German utilities being able to purchase a reciprocal interest in the company buying into VEAG. While a letter of interest has been signed with EdF and negotiations are still proceeding intermittently, progress toward finding reciprocal interests acceptable to all parties has been slow.

At this time, these proposed ownership questions have been rendered moot by a suit filed by numerous east German communities. More than 150 local communities in eastern Germany filed suit in July against the Treuhandanstalt, which had approved the VEAG purchase by the eight west German utilities. The local communities appealed to the Federal Constitutional Court that the sale of 100 percent of VEAG to west German utilities would prohibit them from setting up their own municipal utilities and generating and distributing power for their own use. Thus, the sale of VEAG has been stopped until the Court

Table 2
PROPOSED VEAG OWNERSHIP [1]

RWE-Energie PreussenElektra Bayernwerk	75% [2]
Badenwerk	5%
VEW	5%
EVS	5%
HEW	5%
BEWAG [3]	5%
TOTAL	100%

1 Subject to Federal Court decision and Treuhandanstalt approval. Currently 100-percent owned by the Treuhandanstalt.

2 Up to 15 percent of the 75 percent shared by the Big Three German utilities could be sold to non-German utilities, such as EdF.

3 Berliner Kraft und Licht AG (Berlin utility).

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Table 3
PROPOSED EASTERN GERMANY REGIONAL UTILITY OPERATIONAL INTERESTS

REGION — EASTERN GERMANY REGIONAL UTILITY

BERLIN — Berliner Kraft und Licht AG
Proposed New Ownership Structure:
City of Berlin – 50.82%; PreussenElektra – 10%; Electrowerke Berlin – 10%; Others – 29.18%

ROSTOCK — Hanseatische Energieversorgung AG
Proposed New Ownership Structure:
PreussenElektra – 100%

SCHWERIN — West-Mecklenburgische Energieversorgung AG
Proposed New Ownership Structure:
HEW – 51%; City of Schwerin – 26%; Mecklenberg Vorpommern – 23%

NEUBRANDENBERG — Energieversorgung Müritz-Oderhaff AG
Proposed New Ownership Structure:
PreussenElektra – 100%

MAGDEBURG — Energieversorgung Magdebarg AG
Proposed New Ownership Structure:
City of Magdeburg – 54%; VKR – 29%; VEW – 17%

POTSDAM — Markische Energieversorgung AG
Proposed New Ownership Structure:
PreussenElektra – 100%

FRANKFURT-ODER — Oder-Spree Energieversorgung AG
Proposed New Ownership Structure:
PreussenElektra – 90%; RWE – 10%

ERFURT — Energieversorgung Nordthüringen AG
Proposed New Ownership Structure:
BAG – 66.6%; PreussenElektra – 33.4%

HALLE — Mitteldeutsche Energieversorgung AG
Proposed New Ownership Structure:
VEW – 67.2%; Badenwerk – 16.4%; Isar-Amperwerke – 16.4%

LEIPZIG — Westsächsische Energieversorgung AG
Proposed New Ownership Structure:
RWE – 100%

COTTBUS — Energieversorgung Spree-Schwarze Elster AG
Proposed New Ownership Structure:
RWE – 100%

SUHL — Sudthüringer Energieversorgung AG
Proposed New Ownership Structure:
BAG – 100%

GERA — Ostthüringer Energieversorgung AG
Proposed New Ownership Structure:
BAG – 100%

CHEMNITZ — Energieversorgung Südsachsen AG
Proposed New Ownership Structure:
RWE – 65%; BAG – 35%

DRESDEN — Energieversorgung Sachsen Ost AG
Proposed New Ownership Structure:
State of Saxony and local communities – 40%; EVS – 38%; HEW – 22%

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reaches a decision on the case, possibly by the end of the year. In the meantime, on an operating basis only, VEAG-Geschäftsbersorgung AG (VEAG-GB) has been established to run the east German electricity system; itis owned by RWE Energie (35 percent), PreussenElektra (35 percent), and Bayernwerk (30 percent). The operating company VEAG-GB will cease to exist once the ownership of VEAG is determined.

Within the service area of VEAG, there are 15 regional utilities, whose future ownership is being negotiated. The regional utilities are all 100-percent owned by the Treuhandanstalt, but many proposals have been made for dividing up ownership among west German utilities. The information given in **Table 3** shows proposed future ownership interests in the east German regional utilities. Note that the West Berlin utility, Berliner Kraft und Licht AG (BEWAG), is not part of the VEAG service area; it is owned by the city of Berlin, PreussenElektra, and other private shareholders. Effective January 1, 1991, BEWAG purchased 100 percent of the East Berlin utility (EBAG), with the approval of the Treuhandanstalt. EBAG was first operated as a wholly owned subsidiary, but was integrated completely into BEWAG earlier this year.

VEAG will be responsible for operating an imported hard-coal power station at Stendal, site of two abandoned nuclear reactors that were in the early stages of construction in the former East Germany. Western Germany's Big Three utilities, as well as EdF, are together planning construction of the new coal-fired station. Construction on the two 750-MWe units is scheduled to begin in 1994 and be complete by 1998. East Germany's primary nuclear station at Greifswald was shut down in early 1991 and plans for the enormous decommissioning task are underway. No new power stations are planned for the Greifswald site.

CONCLUSION

Organization of the German nuclear industry has changed constantly over the past several years, and with the reunification of the country, the integration of eastern Germany will bring even more substantial changes in the near-term. The outcome of the pending suit filed by the east German communities, the progress of negotiations on future ownership of east German utilities (by both German and non-German utilities), and most significantly, the effects of an increasingly anti-nuclear political environment, will determine the future structure of the German nuclear industry. Nevertheless, nuclear power still remains an integral part of the country's energy mix, and the continued good performance of existing reactors will contribute to increased public acceptance and perhaps a revival of nuclear power in Germany.

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SPEECH

URANIUM SUPPLY POTENTIAL OF THE CENTRAL ASIAN REPUBLICS

Dustin J. Garrow, Vice President of NUEXCO Trading Corporation, presented the following speech on the republics of Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan at the International Uranium Seminar sponsored by the US Council for Energy Awareness, on September 21, 1992, at Lake Tahoe, Nevada.

Political, social and economic reforms that culminated in the dissolution of the now former Soviet Union, peeled away the layers of secrecy surrounding uranium production throughout the various republics. What is coming to light in Central Asia is a uranium production history extending back to the early 1900s and a significant future supply potential. Substantial uranium reserves were identified and technologically advanced extraction methods implemented under the Soviet regime.

Just where is Central Asia? The relevant geographic region consists of the republics of Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan (**Figure 1**), and encompasses an area as large as the eleven western states of the United States plus Texas. The fifth Central Asian republic, Turkmenistan, does not produce uranium and therefore will not be discussed.

Central Asian history is a tapestry rich in folklore and conflict. The Silk Road from China traversed the region, branching at Samarkand (in modern-day Uzbekistan) to proceed south into India or west to the Caspian Sea. History records Alexander the Great's arrival in Samarkand in 329 B.C., attesting to its antiquity. Timur (or Tamerlane), considered by some historians to be the greatest conqueror the world has ever known, established Samarkand as the capital of an empire which, by the late 1300s, stretched north from India to the Aral Sea.

Ruled by descendants of Genghis Khan, the Golden Horde marched on Central Asia in 1395, but met defeat at the hands of Timur, marking the end of Mongol rule of the region. Further to the north, the Kazakh nation was formed in the mid-15th century when two sons of Barak Khan of the White Horde (Mongol Empire) broke away from the Khan of the Uzbeks, Abul Khayr.

During the mid-16th century, modern day Kazakhstan became the battle ground for the armies of Ivan the Terrible as he waged successful wars against the Khanates of Kazan and Astrakhan.

Russian influence spread into Central Asia in the first half of the 1800s, as St. Petersburg (seat of Romanov authority) strove to expand its presence south toward China.

Having descended principally from nomadic tribes that inhabited the region for centuries, the Central Asians are a fiercely independent people. For example, for several years after the Russian Revolution of 1917, the Central Asians waged a heated, but ultimately futile, guerrilla war against the new Soviet regime. The republics were gradually absorbed into the Soviet Union and given varying degrees of status. "Union Republic" status was conferred on the Central Asian republics between 1924 (Uzbekistan) and 1936 (Kazakhstan and Kyrgyzstan).

LAND AREA/POPULATION/ECONOMY

The four Central Asian Republics comprise an area of approximately 1,353,650 square miles (3,505,900 square kilometers), representing about 15.6 percent of the total area of the former Soviet Union (**Table 1**).

According to the latest census, the four republics contain 46.7 million people, 16.1 percent of the total former Soviet Union (**Figure 2**). The nationality composition of each republic understandably reflects its principal ethnic grouping; however, Russians are a significant presence in Kazakhstan and Kyrgyzstan.

Trade data for the years 1991-1992 clearly indicate recent economic degradation following the implementation of radical economic, social, and political changes (**Table 2**). Exports from the four republics declined by more than

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NUEXCO

SPEECH

Figure 1
RELATIVE LOCATION OF CENTRAL ASIAN REPUBLICS

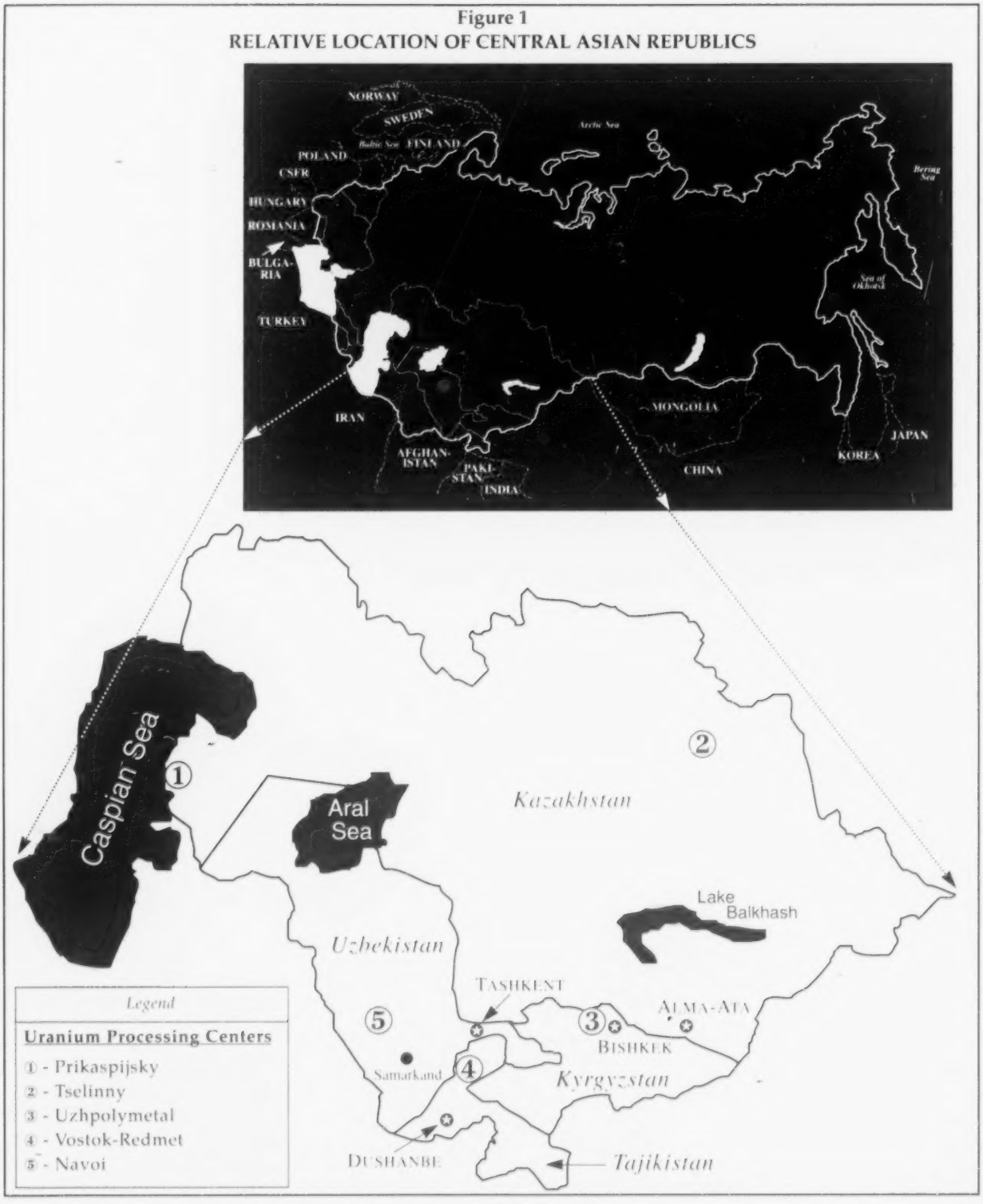

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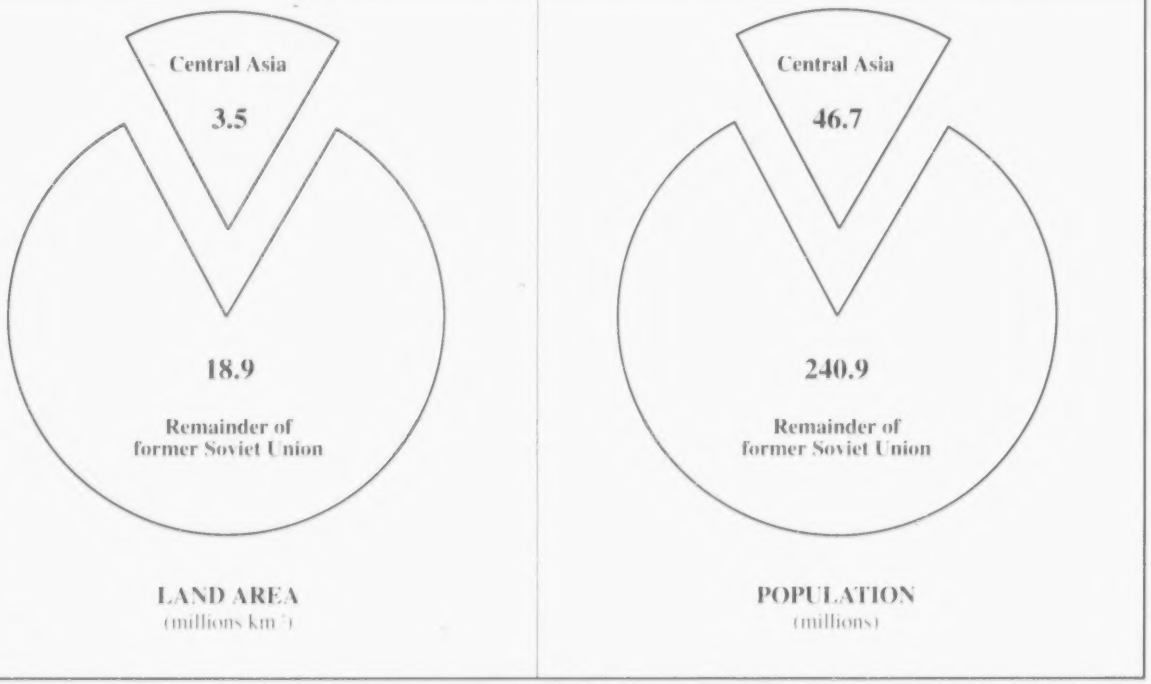
Table 1
TERRITORY AND POPULATION OF CENTRAL ASIAN REPUBLICS
(January 1, 1990)

Republic	Capital	square miles	square km	% of former Soviet Union	Population (millions)	% of former Soviet Union
KAZAKHSTAN	Alma-Ata	1,049,200	2,717,300	12.1	16.7	5.8
KYRGYZSTAN	Bishkek	76,600	198,500	0.9	4.4	1.5
TAJIKISTAN	Dushanbe	55,250	143,100	0.6	5.3	1.8
UZBEKISTAN	Tashkent	172,600	447,000	2.0	20.3	7.0
TOTAL	—	**1,353,650**	**3,505,900**	**15.6**	**46.7**	**16.1**

Figure 2
LAND AREA AND POPULATION OF THE CENTRAL ASIAN REPUBLICS



32 percent, while imports fell by more than 42 percent. While these statistics are based on the official commercial exchange rate (1.7 rubles = US $1.00), the relative change is instructive.

Economic development throughout the Central Asian republics clearly lags the average for the former Soviet Union. The four republics rank as some of the poorest within the former Soviet Union, as indicated by per capita estimates of Gross National Product (**Table 3**).

URANIUM RESOURCES

According to published reports, uranium minerals were first discovered in the early 1800s in the territory of Russia near Ekaterinburg in the central Ural mountains. The earliest uranium mining in the Russian Empire took place during 1904-1914 in the Fergana Basin of eastern Uzbekistan where vanadium-uranium ore was recovered. The majority of this ore was shipped to St. Petersburg for beneficiation and radium recovery.

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Table 2
TRADE STATISTICS — 1990-1991
(Million US $)[1]

	EXPORT			IMPORT		
Republic	**1990**	**1991**	**% Change**	**1990**	**1991**	**% Change**
KAZAKHSTAN	1,293.8	796.7	-38.4	2,792.4	1,692.4	-39.4
KYRGYZSTAN	76.5	46.9	-38.7	1,000.5	573.9	-42.6
TAJIKISTAN	480.0	275.3	-42.6	8,585.9	4,687.9	-45.4
UZBEKISTAN	1,015.6	665.5	-34.5	2,351.9	1,361.4	-42.1
TOTAL	**119,838.3**	**81,418.9**	**-32.1**	**137,628.4**	**79,230.1**	**-42.4**

[1] Based on official conversion rate of 1.7 rubles = 1 dollar.

Uranium exploration activities in the former Soviet Union were conducted under the auspices of the Ministry of Geology of the USSR. Further coordination was achieved at the republic level by such entities as the Volkov Production and Geological Association, located at Alma-Ata, which had responsibility for all uranium exploration activities in Kazakhstan and Kyrgyzstan.

The Moscow government began a systematic uranium exploration program immediately following World War II. Initial discoveries occurred in Central Asia.

Geologic information regarding the uranium resources of the CIS are becoming increasingly available. An August 1991 paper presented to the International Atomic Energy Agency (IAEA), co-authored by several recognized Soviet uranium experts ("Uranium Resources of the Union of Soviet Socialist Republics", Laverov, N.P., et al.), provides the most comprehensive treatment of the subject available thus far.

As shown in **Table 4 & Figure 3**, Central Asian republics contain almost 60 percent of the low-cost uranium resources in the former Soviet Union—less than $80 per kgU or $30 per pound U_3O_8. Known uranium resources in this cost category aggregate an estimated 265,900 tonnes U—more than 57 percent of the national total.

Table 3
GROSS NATIONAL PRODUCT (GNP) PER CAPITA, FOR EACH REPUBLIC

Republic	**GNP per Capita (as % of Soviet Average)**
Kazakhstan	71
Kyrgyzstan	56
Tajikistan	45
Uzbekistan	50

The Kyzylkum region of Uzbekistan (Kyzl Kum Desert) represents the highest potential for future low-cost uranium production, based on the extensive application of solution mining technology.

URANIUM PRODUCTION FACILITIES

Uranium production in the former Soviet Union was under the oversight of the Ministry of Atomic Energy and Industry (MAEI), located in Moscow. The actual production of natural uranium concentrates was carried out by "kombinats" (enterprises), which developed integrated industrial complexes within the former Soviet Union. The kombinats continue to have far-reaching responsibilities, incorporating not only industrial output but, in addition, social infrastructure (health services, education, recreation) and, in many cases, housing for the employees of the kombinat and associated support personnel.

The Central Asian region hosts five major uranium production centers (Figure 1). These beneficiation facilities are integrated into processing plants whose output, in some cases, ranges from consumer products to petrochemicals and heavy manufacturing.

Total annual uranium production capability for the region equals 22.0-23.5 million pounds U_3O_8 (8,500-9,000 MTU as U_3O_8) as shown in **Table 5 & Figure 4**. However, recent production levels have been below the nominal capability. (The Uranium Institute estimates 1991 production from the four-republic region as 6,700 MTU, or approximately 17.4 million pounds U_3O_8).

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Table 4
URANIUM RESOURCES OF THE CENTRAL ASIAN REPUBLICS
– Recoverable at Costs Less Than $80/KgU –
(Thousand Metric Tons of Uranium)

Area	Known Resources	Est. Additional Resources	Prognosticated Resources
KARAMAZAR	20.0	-	-
KOKCHETAVSK	72.4	9.2	-
KYZYLKUM	155.6	106.0	100.0
PRIBALKHASH	17.9	50.0	50.0
TOTALS:			
CENTRAL ASIA	**265.9**	**165.2**	**150.0**
FORMER SOVIET UNION	465.0	325.8	200.0

Source: "Uranium Resources of the Union of Soviet Socialist Republics", Laverov, N.P., et al., presented before the IAEA Technical Committee Meeting on New Developments in Uranium Exploration, Resources, Production and Demand, 26-29 August 1991.

The region's uranium production plants are listed in Table 5 and are discussed below by republic.

Kazakhstan

The Prikaspijsky (Caspian) Mining and Metallurgical Kombinat, located on the eastern shore of the Caspian Sea near the city of Shevchenko, operates two open-pit mines developed during the mid-1960s. Uranium exploration commenced in 1956, and an underground test mine was constructed in 1959. Natural uranium concentrates are produced, in conjunction with phosphoric acid (P_2O_5), and rare earths also are extracted from the phosphoric ores.

Figure 3
URANIUM RESOURCES OF THE CENTRAL ASIAN REPUBLICS
(recoverable at costs less than $80/kgU)

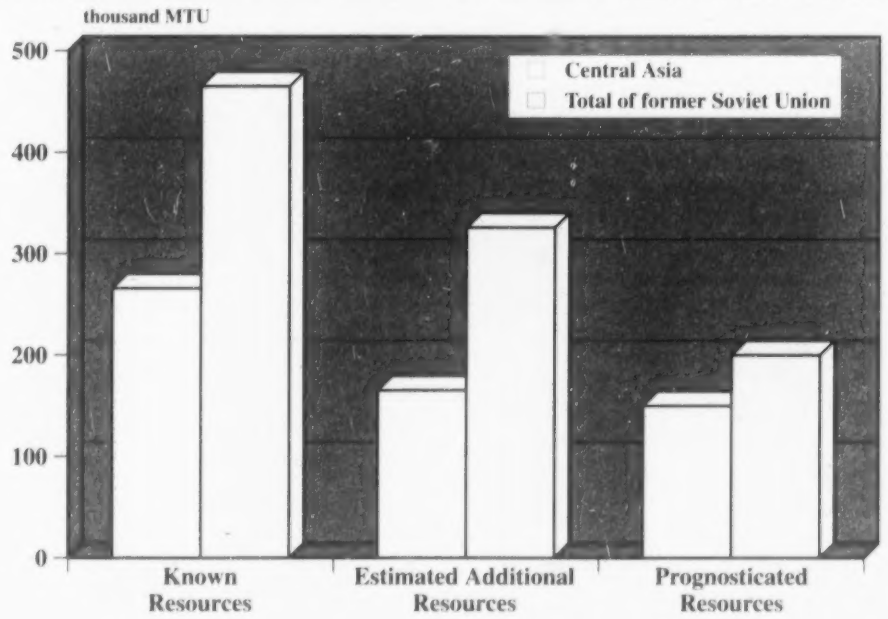

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Table 5
CENTRAL ASIAN REPUBLICS –
URANIUM PRODUCTION FACILITIES

REPUBLIC Processing Entity	Location	Est. Annual Capacity (Thousand lbs U_3O_8)	Associated Mining District
KAZAKHSTAN			
Prikaspijsky (Caspian) Mining and Metallurgical Kombinat	Shevchenko	3,000	Zacaspiysk (Caspian)
Tselinny Mining and Chemical Kombinat	Stepnogorsk	3,000	Kokchetavsk
KYRGYSTAN			
Uzhpolymetal Mining and Metallurgical Kombinat	Bishkek (Kara Balta)	5,000	Pribalkhash (Lake Balkhash)
TAJIKISTAN			
Vostok-Redmet (formerly Leninbad Mining and Metallurgical Kombinat)	Chkalovsk	4,500	Currently receives uranium ore/slurry from mines in Kazakhstan and Uzbekistan
UZBEKISTAN			
Navoi Mining and Metallurgical Kombinat	Navoi	8,000	Kyzylkum (Kyzyl Kum Desert)

A series of underground uranium mines provide ore to the Tselinny Mining and Chemical Kombinat, located near the city of Stepnogorsk in northeastern Kazakhstan (southern edge of the West Siberian plain). The associated mines were developed in several phases beginning in the mid-1950s. Uranium ore is delivered by rail to the processing facility at Stepnogorsk.

The Kazakhstan State Atomic Power, Engineering, and Industry Corporation (known as KATEP), headquartered in the capital of Alma-Ata, was formed recently as a production organization to coordinate uranium-related activities within the republic.

Kyrgyzstan

Uranium production takes place under the auspices of the Uzhpolymetal Mining and Metallurgical Kombinat, situated at Kara Balta, outside the capital city of Bishkek (formerly Frunze). The kombinat was formed in 1951 to exploit the uranium deposits of Kazakhstan and Kyrgyzstan. A conventional uranium mill was commissioned at Kara Balta in 1955.

Production of slurry from solution mining developments was initiated in the late-1970s, as local conventional reserves reached depletion. The kombinat currently operates two primary and one satellite in-situ leaching (ISL) facilities in south-central Kazakhstan (near the city of Zhuantobe).

Tajikistan

Vostok-Redmet (formerly the Leninabad Mining and Metallurgical Kombinat), located at Khodjent in northeastern Tajikistan operates a conventional uranium mill. The hydrometallurgical plant processes ore produced from an open-pit mine in Uzbekistan (15 percent), as well as ISL slurry received from mines in Kazakhstan and Uzbekistan (85 percent).

Uzbekistan

The Navoi Mining and Metallurgical Kombinat was established in 1958 in order to develop the uranium reserves of Uzbekistan. The uranium beneficiation facility (designated Plant 1) entered operation in 1964.

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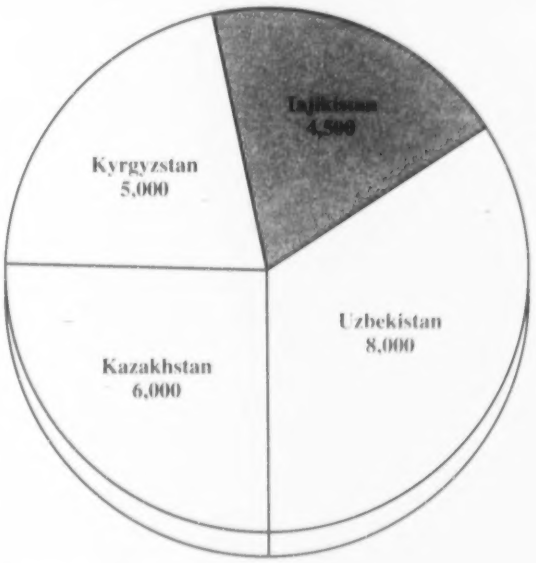
Figure 4
ANNUAL URANIUM PRODUCTION CAPACITY OF THE CENTRAL ASIAN REPUBLICS
(thousand pounds U_3O_8)



The kombinat has produced uranium ores from both conventional sources (underground and open-pit mines) as well as solution mines. Conventional mines are either being phased-out (underground) or are scheduled to be decommissioned by the mid-1990s (open-pit). Future uranium production will focus primarily on solution mines located at Uchkuduk and Nurabat.

EXTRACTION TECHNOLOGY

As indicated in the previous section, uranium mining technologies used in Central Asia include both conventional (open-pit and underground) as well as solution mining (in-situ leaching). Representing less than 10 percent of regional output, one Kazakh facility produces U_3O_8 from phosphate rock.

Conventional mining is declining in importance. However, open-pit and underground mines did provide approximately one-third of 1991 uranium production.

The Soviets developed an indigenous solution mining technology during the 1960s and 1970s. Significant ISL mining takes place in Kazakhstan and Uzbekistan, representing more than 55 percent of the four-republic region's uranium production in 1991. Solution mining's contribution to regional output may approach 90 percent by the mid-1990s.

TRANSPORTATION OF URANIUM CONCENTRATES

Historically, the central Soviet government controlled uranium concentrates shipments into Russia for immediate use or stockpiling. Increased interest in U_3O_8 exports resulted in further evaluation of alternate transportation routing and modes.

Due to the centrally planned nature of the Soviet Union infrastructure, coupled with military-oriented concerns, transportation of strategic commodities such as uranium concentrates has been closely-monitored. The principal port through which uranium is exported remains St. Petersburg, requiring internal rail transport of thousands of kilometers from Central Asia. Rail links through neighboring countries such as China are impractical at the present time.

Air transport, while technically feasible, does not appear viable at the present time, because of escalating fuel costs and unresolved political issues such as overflight and landing rights. This situation may improve in the future, depending upon the evolution of relations between the Central Asian republics and other nations with regional interests.

CONCLUSION

In closing, I just want to say that the dissolution of the Soviet Union ushered in a new era for the Central Asian republics. Virtually overnight, the political and economic underpinnings of these lesser-developed nations were thrown into a state of flux.

During the post-World War II period, uranium production emerged as an important component of Central Asian resource development. Significant strides were made in uranium exploration/resource identification, extraction technology development, and processing facility construction. Entire cities came into being, based principally on the mining and beneficiation of uranium. The Central Asian republics represent a substantial future source of natural uranium concentrates for Western World reactors.

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CALENDAR

NUCLEAR INDUSTRY CALENDAR

1992

Oct. 11-16 ***USCEA Training Seminar on the Fundamentals of Nuclear Power***
(Georgetown University Conference Center, Washington, DC).
Sponsored by the U.S. Council for Energy Awareness
Contact: USCEA Conference Office, 202-293-0770; Telex: 7108249602; Fax: 202-785-4113
Mail: 1776 "I" Street NW, Suite 400, Washington, DC 20006-3708

Oct. 18-22 ***AMC Mining Convention*** (Las Vegas, Nevada).
Sponsored by the American Mining Congress
Contact: AMC Convention Office, 202-861-2800; Fax: 202-861-7535

Oct. 19-23 ***International Symposium on Geological Disposal of Spent Fuel, High-level and Alpha-bearing Wastes***
(Antwerp, Belgium).
Sponsored by the International Atomic Energy Agency
Contact: IAEA Conference Service Section, P. O. Box 100, A-1400 Vienna, Austria

Nov. 9-10 ***Financial Times/Power in Europe World Electricity Conference*** (Hotel Inter-Continental, London, UK).
Contact: FT Conferences, 071-925-2323; Fax: 071-925-2125
Mail: 126 Jermyn Street, London SW1Y 4UJ, United Kingdom

Nov. 15-18 ***International Nuclear Energy Forum "A Shrinking World, Expanding Horizons"***
(Fairmont Hotel, Chicago, Illinois).
Sponsored by the U.S. Council for Energy Awareness
Contact: USCEA Conference Office, 202-293-0770; Telex: 7108249602; Fax: 202-785-4113
Mail: 1776 "I" Street NW, Suite 400, Washington, DC 20006-3708

Nov. 15-20 ***American Nuclear Society Winter Meeting*** (McCormick Center Hotel, Chicago, Illinois).
Contact: ANS Meetings Department, 708-352-6611

Nov. 22-24 ***2nd International Conference on CANDU Maintenance*** (Holiday Inn On King, Toronto, Canada).
Sponsored by the Canadian Nuclear Association and Canadian Nuclear Society
Contact: CANDU Conference, 416-823-9040; Fax: 416-823-6120
Mail: 2251 Speakman Drive, Mississauga, Ontario, Canada L5K 1B2

Dec. 10-11 ***18th Annual Energy Daily Conference "Beyond The National Energy Strategy"***
(Hyatt Crystal City, Arlington, Virginia)
Contact: King Communications Group, Inc. (Lauren or Karen), 202-662-9278; Fax: 202-662-9719
Mail: 627 National Press Building, Washington, DC 20045

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NUCLEAR INDUSTRY CALENDAR

1993

Feb. 28-Mar. 3 ***Nuclear Insurance Conference*** (Le Meridien at Coronado, San Diego, California).
Sponsored by the U.S. Council for Energy Awareness
Contact: USCEA Conference Office, 202-293-0770; Telex: 7108249602; Fax: 202-785-4113
Mail: 1776 "I" Street NW, Suite 400, Washington, DC 20006-3708

Mar. 21-24 ***Fuel Cycle Conference '93*** (Lowes Anatole Hotel, Dallas, Texas).
Sponsored by the U.S. Council for Energy Awareness
Contact: USCEA Conference Office, 202-293-0770; Telex: 7108249602; Fax: 202-785-4113
Mail: 1776 "I" Street NW, Suite 400, Washington, DC 20006-3708

May 16-18 ***INFO '93 Conference*** (Don Cesar Hotel, Tampa, Florida).
Sponsored by the U.S. Council for Energy Awareness
Contact: USCEA Conference Office, 202-293-0770; Telex: 7108249602; Fax: 202-785-4113
Mail: 1776 "I" Street NW, Suite 400, Washington, DC 20006-3708

Sept. 28-30 ***Crisis/Emergency Information Planner's Workshop*** (Westin William Penn Hotel, Pittsburg, Penn.).
Sponsored by the U.S. Council for Energy Awareness
Contact: USCEA Conference Office, 202-293-0770; Telex: 7108249602; Fax: 202-785-4113
Mail: 1776 "I" Street NW, Suite 400, Washington, DC 20006-3708

Oct. 3-6 ***Uranium Seminar '93*** (Westin La Paloma Hotel, Tucson, Arizona).
Sponsored by the U.S. Council for Energy Awareness
Contact: USCEA Conference Office, 202-293-0770; Telex: 7108249602; Fax: 202-785-4113
Mail: 1776 "I" Street NW, Suite 400, Washington, DC 20006-3708

Oct. 3-7 ***INC'93 (International Nuclear Congress and Exhibition) "Towards a Better Future"***
(Sheraton Centre, Toronto, Canada).
Sponsored by the Canadian Nuclear Association and Canadian Nuclear Society
Contact: INC'93 Conference, 416-823-9040; Fax: 416-823-6120
Mail: 2251 Speakman Drive, Mississauga, Ontario, Canada L5K 1B2

Nov. 14-17 ***Nuclear Energy Forum*** (Westin St. Francis Hotel, San Francisco, California).
Sponsored by the U.S. Council for Energy Awareness
Contact: USCEA Conference Office, 202-293-0770; Telex: 7108249602; Fax: 202-785-4113
Mail: 1776 "I" Street NW, Suite 400, Washington, DC 20006-3708

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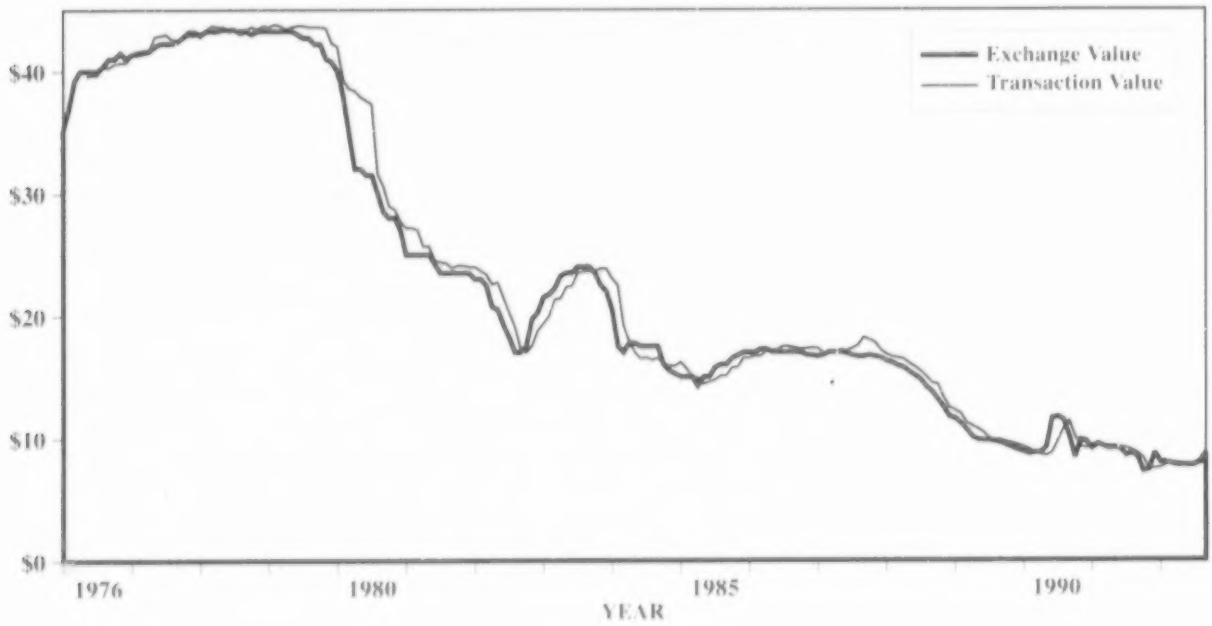
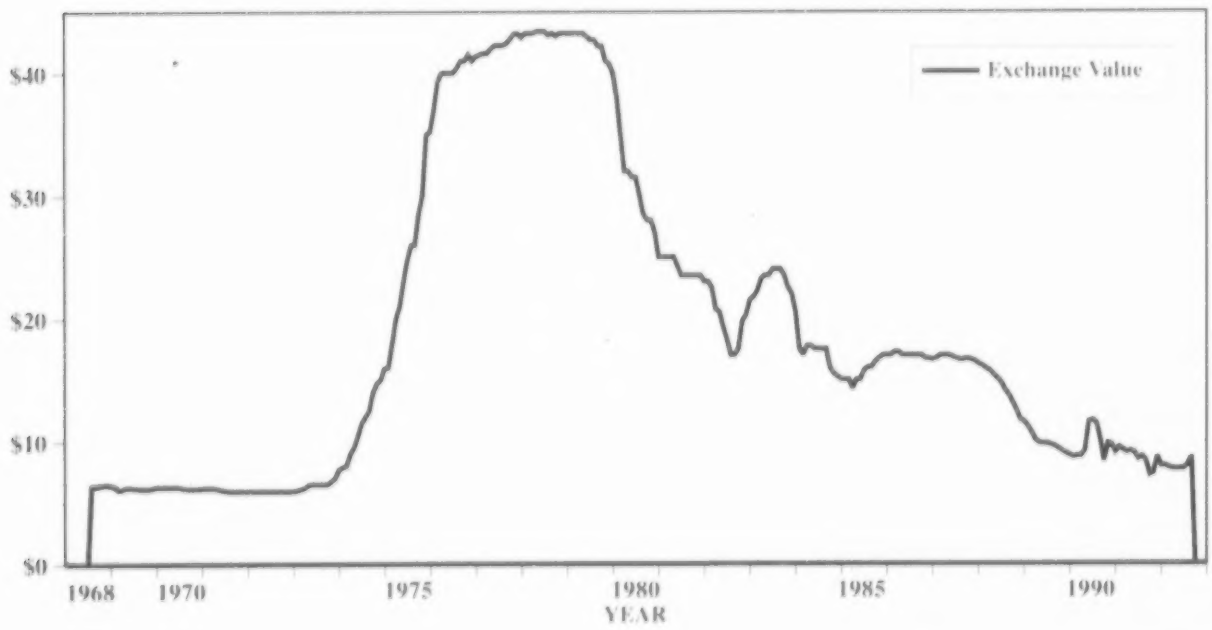
NUEXCO HISTORICAL EXCHANGE VALUE AND TRANSACTION VALUE

(in US dollars per pound U_3O_8)





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HISTORICAL MARKET VALUES

Exchange Values

Determined as of the last day of the month indicated ($US/lb U_3O_8)

Year	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1968	—	—	—	—	—	—	—	6.35	6.35	6.40	6.45	6.50
1969	—	6.35	6.10	6.10	6.25	6.25	6.20	6.20	6.15	6.15	6.15	6.20
1970	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.20	6.15	6.15	6.15	6.15
1971	6.20	6.20	6.20	6.20	6.15	6.05	6.00	5.95	5.95	5.95	5.95	5.95
1972	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95
1973	5.95	6.00	6.10	6.20	6.45	6.50	6.50	6.50	6.50	6.50	6.75	7.00
1974	7.70	7.90	8.00	9.00	9.50	10.50	11.50	12.00	12.50	14.00	14.75	15.00
1975	16.00	16.00	18.00	20.00	21.00	23.00	24.70	26.00	26.00	28.50	30.00	35.00
1976	35.20	37.00	39.25	40.00	40.00	40.00	40.00	40.40	41.00	41.00	41.50	41.00
1977	41.35	41.50	41.60	41.60	42.00	42.25	42.25	42.25	42.40	42.75	43.20	43.20
1978	42.90	43.25	43.25	43.25	43.40	43.40	43.40	43.10	43.25	43.00	43.25	43.25
1979	43.25	43.25	43.25	43.25	43.25	43.00	42.70	42.70	42.20	42.20	41.00	40.75
1980	40.00	38.00	35.00	32.00	32.00	31.50	31.50	30.00	28.50	28.00	28.00	27.00
1981	25.00	25.00	25.00	25.00	25.00	24.25	23.50	23.50	23.50	23.50	23.50	23.50
1982	23.00	23.00	22.50	20.75	20.50	19.25	18.25	17.00	17.00	17.50	19.75	20.25
1983	21.50	21.75	22.25	23.25	23.50	23.50	24.00	24.00	24.00	23.50	22.50	22.00
1984	20.50	17.50	17.00	17.75	17.75	17.50	17.50	17.50	17.50	16.00	15.50	15.25
1985	15.00	15.00	15.00	14.25	15.00	15.00	15.75	16.00	16.00	16.50	16.75	17.00
1986	17.00	17.00	17.25	17.25	17.00	17.00	17.00	17.00	17.00	17.00	16.75	16.75
1987	16.65	16.75	17.00	17.00	17.00	16.90	16.75	16.65	16.65	16.75	16.65	16.55
1988	16.30	16.15	15.90	15.75	15.40	15.10	14.75	14.15	13.75	13.15	12.50	11.75
1989	11.60	11.20	10.70	10.10	9.85	9.80	9.80	9.70	9.60	9.40	9.20	9.00
1990	8.85	8.70	8.80	8.80	9.25	11.60	11.70	11.45	10.10	8.35	9.80	9.70
1991	9.10	9.50	9.30	9.10	9.20	9.05	8.55	8.75	8.40	7.25	7.40	8.75
1992	8.00	8.00	7.85	7.75	7.75	7.75	7.75	8.05	**8.75**			

US Premium (Relative to the Exchange Value)

Determined as of the last day of the month indicated ($US/lb U_3O_8)

Year	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1986	—	—	—	—	—	—	—	—	—	—	0.65	0.75
1987	0.85	1.00	1.50	1.50	0.90	0.60	2.50	2.35	2.10	1.65	0.85	0.65
1988	0.70	0.50	0.15	0.25	0.60	0.00	0.00	0.00	0.00	0.00	**Discontinued**	

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HISTORICAL MARKET DATA

UF_6 Values

Year	Determined as of the last day of the month indicated ($US/kg U as UF_6)											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1985	—	—	—	40.50	42.50	42.50	44.00	44.50	44.50	46.00	46.00	47.00
1986	47.00	48.00	48.00	48.50	48.25	48.25	48.25	48.00	48.00	48.00	48.00	47.75
1987	47.75	48.00	48.00	48.00	47.75	47.75	47.50	47.00	46.75	47.00	47.00	47.00
1988	46.50	46.00	45.50	45.25	44.75	44.00	42.75	41.00	40.75	39.00	37.50	35.50
1989	34.75	34.00	33.00	30.50	30.25	30.25	30.00	29.75	29.75	28.25	27.75	26.50
1990	25.90	25.25	24.40	24.40	25.50	32.00	32.50	32.25	29.50	24.75	28.75	28.75
1991	27.50	27.75	27.50	27.25	27.60	27.25	25.75	26.25	25.50	22.75	22.75	26.00
1992	24.50	24.25	24.00	23.75	23.60	23.60	23.50	24.25	**26.00**			

US Premium (Relative to the UF_6 Value)

Year	Determined as of the last day of the month indicated ($US/kg U as UF_6)											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1986	—	—	—	—	—	—	—	—	—	—	2.50	2.50
1987	2.50	2.50	3.50	3.00	2.25	1.75	6.50	6.00	4.25	3.10	2.25	2.00
1988	1.25	1.25	0.50	0.50	1.00	0.00	0.00	0.00	0.00	0.00	**Discontinued**	

Conversion Values

Year	Determined as of the last day of the month indicated ($US/lb U as UF_6)											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1981	1.20	1.20	1.20	1.40	1.15	1.15	1.15	1.10	1.10	1.10	1.20	1.20
1982	1.20	1.20	1.20	1.20	1.00	1.00	1.00	0.90	1.10	1.60	1.45	1.45
1983	1.20	1.40	1.40	1.20	1.20	1.20	1.10	1.10	1.00	0.60	0.60	0.60
1984	0.60	0.30	0.80	0.80	0.80	0.00	0.00	0.80	1.00	1.00	0.80	0.80
1985	1.00	1.00	1.00	1.50	1.50	1.60	1.60	1.60	1.60	1.60	1.60	1.60
1986	1.60	1.80	1.90	1.80	1.80	1.80	1.80	1.90	1.90	1.90	1.80	1.80
1987	1.80	1.80	1.80	1.80	1.80	1.80	1.90	1.90	1.90	1.90	1.90	1.90
1988	1.90	1.80	1.80	1.80	1.80	1.80	1.85	1.95	1.95	1.95	1.95	1.95
1989	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.90	1.90	1.80	1.75	1.65
1990	1.50	1.50	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
1991	1.45	1.45	1.45	1.45	1.50	1.50	1.50	1.60	1.55	1.55	1.55	1.55
1992	1.60	1.60	1.60	1.60	1.60	1.50	1.50	1.50	**1.40**			

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Transaction Values

Year	Determined as of the last day of the month indicated ($US/lb U_3O_8)											
	Jan	**Feb**	**March**	**April**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**
1976	—	—	—	—	39.60	39.70	39.70	40.40	40.30	40.60	40.70	40.70
1977	41.30	41.30	41.40	41.50	42.80	42.90	43.00	42.60	42.50	42.80	42.90	42.90
1978	43.10	43.30	43.70	43.60	43.60	43.20	43.30	43.40	43.40	43.60	43.40	43.70
1979	43.60	43.80	43.70	43.40	43.60	43.70	43.70	43.60	43.60	43.60	43.50	42.30
1980	42.00	39.30	38.60	38.40	37.90	37.60	37.30	31.60	30.60	29.00	28.70	27.70
1981	27.20	27.20	27.00	25.70	25.70	24.50	24.40	24.30	23.90	24.10	24.10	24.00
1982	24.00	23.70	23.40	22.60	22.70	21.50	20.30	19.10	17.30	17.00	17.55	18.80
1983	19.35	20.00	21.35	21.40	22.35	22.45	23.50	23.60	23.65	23.65	23.85	23.85
1984	23.05	22.50	19.25	17.90	17.00	16.50	16.60	16.40	16.55	16.05	15.90	15.90
1985	16.20	15.70	15.05	14.90	14.45	14.60	14.75	15.10	15.10	15.75	15.80	16.55
1986	16.55	16.70	16.70	17.10	17.15	17.20	17.50	17.45	17.35	17.25	17.30	17.35
1987	17.35	16.90	16.95	17.00	17.20	17.10	17.30	17.55	18.20	18.05	17.80	17.20
1988	16.85	16.65	16.55	16.45	16.10	15.80	15.45	15.00	14.50	14.40	13.30	12.50
1989	12.25	12.00	11.25	11.00	10.75	10.45	9.95	9.80	9.80	9.65	9.55	9.40
1990	9.25	9.05	8.75	8.65	8.55	8.80	9.75	10.80	11.40	10.10	9.30	9.15
1991	9.40	9.45	9.35	9.30	9.30	9.20	9.15	8.95	8.70	8.35	7.45	7.50
1992	7.55	7.80	7.95	7.90	7.85	7.80	7.75	7.85	**7.95**			

SWU Values

Year	Determined as of the last day of the month indicated ($US per SWU)											
	Jan	**Feb**	**March**	**April**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**
1986	80	80	80	80	75	78	78	78	78	78	80	80
1987	80	80	77	77	75	73	75	75	73	69	73	73
1988	73	73	70	68	68	68	68	65	65	65	65	65
1989	65	67	67	67	66	66	66	65	63	59	57	54
1990	54	50	50	50	50	50	50	50	50	51	51	51
1991	51	50	52	52	54	59	66	67	67	68	68	70
1992	71	70	69	67	65	65	66	66	**68**			

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HISTORICAL MARKET DATA

Loan Rates

Year	Determined as of the last day of the month indicated (Percent per Annum)											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1968	—	—	—	—	—	—	—	4.00	4.00	4.00	4.00	4.00
1969	4.00	4.00	5.00	5.00	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00
1970	6.00	6.20	6.40	6.50	6.50	6.50	6.50	5.00	6.50	6.00	5.50	5.50
1971	5.00	4.75	4.75	4.75	5.00	5.25	5.25	5.25	5.25	5.25	4.50	4.50
1972	4.00	4.00	4.00	4.50	4.50	4.50	5.00	5.00	5.00	5.00	5.00	5.00
1973	5.50	5.50	5.75	5.75	6.00	6.25	7.00	7.00	7.00	7.00	7.50	8.00
1974	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
1975	8.00	7.00	7.00	7.00	7.00	6.50	6.50	6.50	6.50	6.50	6.50	6.50
1976	6.50	6.50	6.50	6.50	*	*	*	*	*	*	*	*
1977	*	*	*	*	6.50	6.50	6.50	6.75	7.25	7.25	7.25	7.25
1978	7.25	7.00	7.00	7.00	7.00	7.50	7.75	7.75	7.75	7.00	7.00	7.00
1979	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
1980	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
1981	7.00	7.00	7.00	7.00	7.00	5.50	5.50	5.50	5.50	6.00	6.00	6.00
1982	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
1983	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
1984	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
1985	6.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
1986	5.00	5.00	5.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
1987	3.00	3.00	3.00	3.00	3.00	3.00	3.00	4.00	4.00	4.00	3.50	3.50
1988	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
1989	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
1990	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
1991	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.00
1992	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	**3.00**			

* Float with Prime Rate

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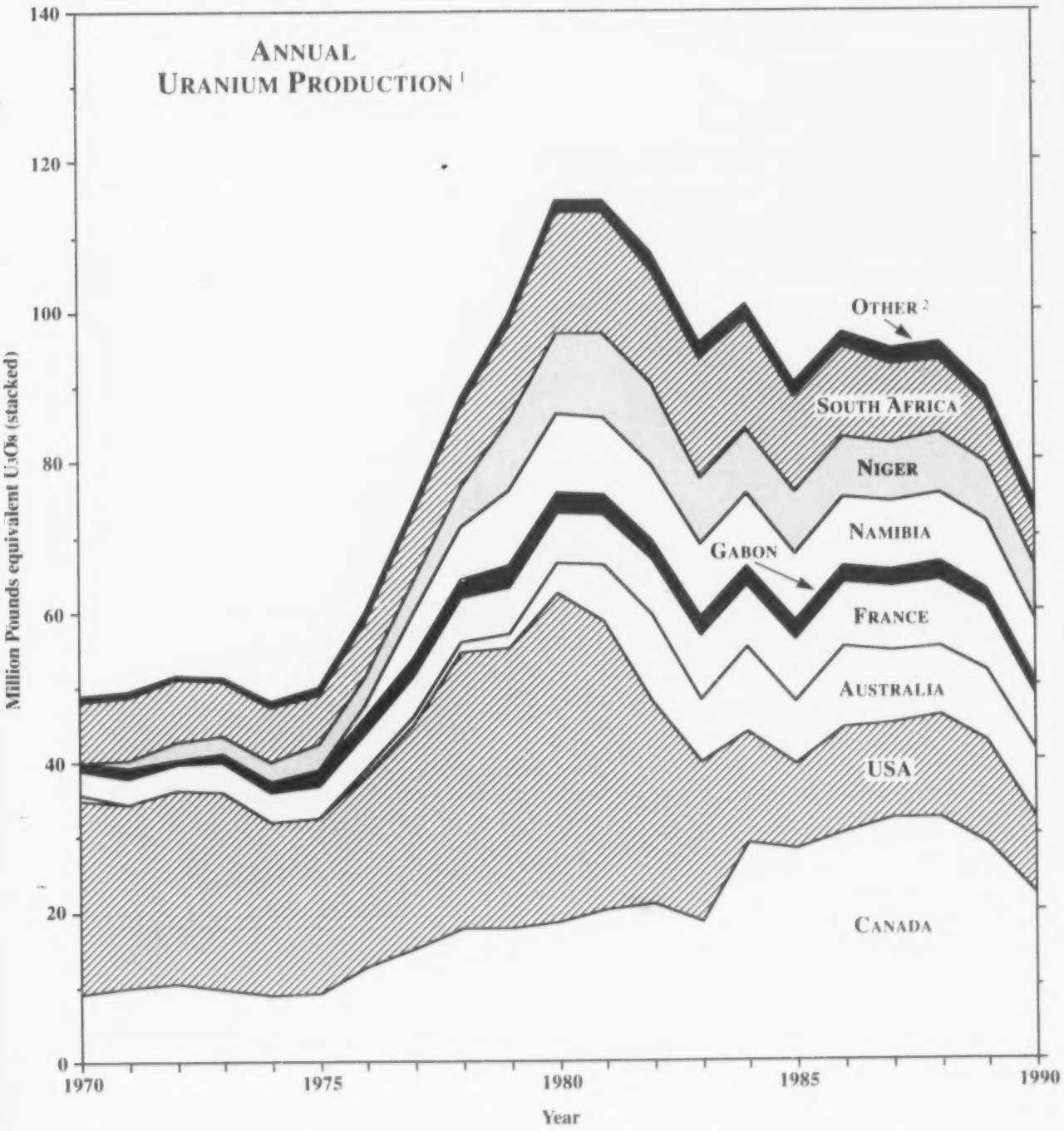

[1] Estimated western world uranium production in 1990 totalled 74.5 million pounds equivalent U_3O_8 —
(Australia: 9.1 – Canada: 22.0 – France: 7.4 – Gabon: 1.8 – Namibia: 8.0 – Niger: 7.4 – South Africa: 6.4 – USA: 10.2 – Other [2]: 2.2)

[2] **Other** includes: Argentina, Belgium, Brazil, India, Pakistan, Portugal, Spain, former West Germany, and Yugoslavia (Slovenia)

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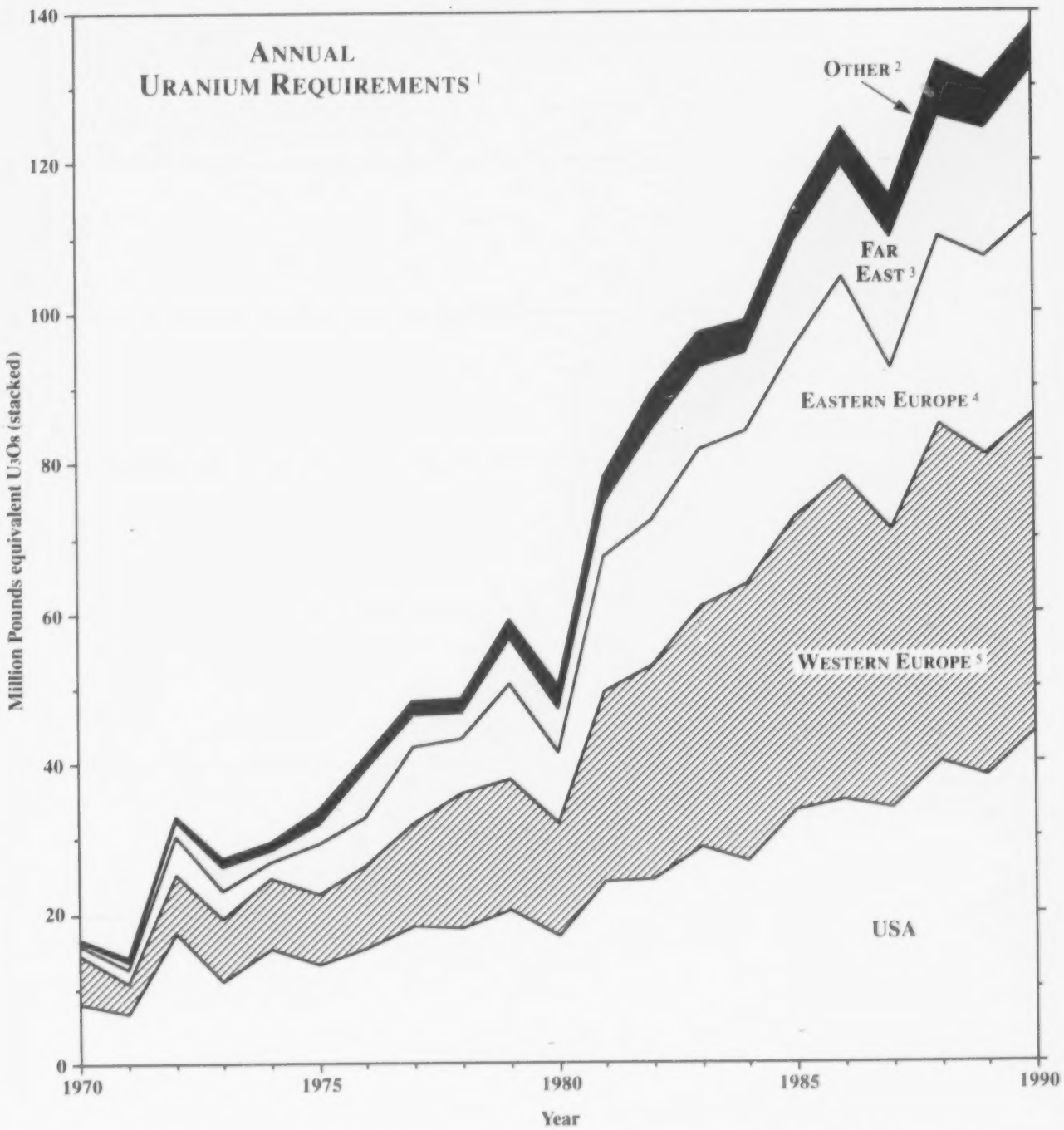
HISTORICAL MARKET DATA



[1] Calculated by NUEXCO based on actual completion dates and operating performance, and NUEXCO's estimate of enriching tails assay.
[2] **Other** includes: Argentina, Brazil, Canada, India, Mexico, Pakistan, and South Africa.
[3] **Far East** includes: Japan, People's Republic of China, South Korea, and Taiwan.
[4] **Eastern Europe** includes: Bulgaria, Czechoslovakia, former East Germany, Finland, Hungary, former Soviet Union, and Yugoslavia (Slovenia).
[5] **Western Europe** includes: Belgium, France, former West Germany, Italy, The Netherlands, Spain, Sweden, Switzerland, and UK.

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Australia

Year	Period	Consumer Price Index[1] (1989/1990 = 100)	Price Index of Materials Used in Manufacturing Industry — All Groups[3] (1984/1985 = 100)	Average Weekly Ordinary Time Earnings — Adult Males — Australia[5] (Australian dollars)	Award Rates of Pay Indexes Australia - Adult Males In Mining Wage Earners, Weekly Rates[4] (June 1985 = 100)
1980	Avg.	47.4	83.1	—	69.6
1981	Avg.	51.9	85.9	—	76.1
1982	Avg.	57.7	89.0	—	86.4
1983	Avg.	56.9	96.9	—	89.9
1984	Avg.	66.0	98.0	—	96.0
1985	Avg.	70.5	107.3	—	100.0
1986	Avg.	76.9	101.5	—	104.9
1987	Avg.	83.4	108.9	465.88	112.9
1988	Avg.	89.4	111.8	496.90	115.4
1989	Avg.	96.2	117.0	534.65	126.0
1990	Avg.	103.2	123.4	571.43	129.7
1991	Avg.	106.5	120.1	600.35	133.7
Jan	1991	—	125.6	—	133.0
Feb	1991	—	121.5	597.70	133.0
Mar	1991	105.8	119.1	—	133.3
Apr	1991	—	117.6	—	133.3
May	1991	—	117.8	592.00	133.4
June	1991	106.0	120.4	—	133.4
July	1991	—	120.4	—	133.5
Aug	1991	—	119.9	599.50	133.8
Sept	1991	106.6	118.3	—	134.2
Oct	1991	—	118.7	—	134.4R
Nov	1991	—	120.6	612.20	134.5R
Dec	1991	107.6	121.2	—	134.5
Jan	1992	—	120.9	—	134.7
Feb	1992	—	120.9	625.20	134.8R
Mar	1992	107.6	120.0	—	134.9R
Apr	1992	—	120.5	—	134.9R
May	1992	—	122.4	624.80	135.1R
June	1992	107.3	124.6	—	135.1R
July	1992	—	126.2	—	135.1

P = Preliminary **R** = Revised since last month

[1] Monthly data for the period 1967 to 1990 appears in NUEXCO Monthly Report 278.

[2] Weighted average of six State capital cities (1975 to 1980), and eight capital cities from 1981 (Base: Financial year July 1989 to June 1990 = 100.0). Figures shown at end of quarter represent quarterly average. Base year changed from 1980/81 in Monthly Report 286.

[3] Australian Bureau of Statistics, Canberra: "Price Index of Materials Used in Manufacturing Industry" (CATALOGUE No. 6411.0).

[4] Australian Bureau of Statistics, Canberra: "Award Rates of Pay Indexes, Australia" (CATALOGUE No. 6312.0). Figures for the latest fourteen months shown are subject to revision.

[5] Australian Bureau of Statistics, Canberra: "Average Weekly Earnings, States & Australia" (CATALOGUE No. 6302.0).

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GOVERNMENT STATISTICS

Canada

Year	Period	Industrial Products Price Index: All Commodities (1986 = 100)[1]	Consumer Price Index: All Items (1986 = 100)[2]	Wage-earner Data: Average Hourly Earnings (C$)[4] Uranium Mines (SIC 057)	Metal Mines (SIC 061)	Mines, Quarries and Oil Wells (SIC 061-092)	Metal Rolling, Casting and Extruding (SIC 299)	Chemicals and Chemical Products Industries (SIC 371-379)
1980	Avg.	75.9	67.2	—·—	—·—	—·—	—·—	—·—
1981	Avg.	83.6	75.5	—·—	—·—	—·—	—·—	—·—
1982	Avg.	89.0	83.7	—·—	—·—	—·—	—·—	—·—
1983	Avg.	92.1	88.5	17.22	15.27	14.58	10.17	11.03
1984	Avg.	96.3	92.4	17.89	16.25	15.29	10.59	11.67
1985	Avg.	99.0	96.0	18.53	16.73	15.83	11.54	12.14
1986	Avg.	100.0	100.0	19.38	16.88	15.98	12.20	12.65
1987	Avg.	102.8	104.4	20.12	17.16	16.25	13.04	13.22
1988	Avg.	107.2	108.6	20.91	18.60	17.22	13.58	13.72
1989	Avg.	109.4	114.0	21.97	19.60	18.37	14.02	14.31
1990	Avg.	109.7	119.4	22.90	20.53	19.11	14.88	15.13
1991	Avg.	108.6	126.2	24.35	22.44	20.59	14.94	16.22
Jan	1991	111.1	125.0	23.79	21.53	19.94	14.86	15.51
Feb	1991	110.6	125.0	25.23	22.32	20.39	14.82	15.84
Mar	1991	109.8	125.5	24.19	22.17	20.57	15.50	16.19
Apr	1991	109.1	125.5	24.77	22.20	20.57	14.76	16.28
May	1991	108.6	126.1	24.38	21.86	20.51	15.04	16.26
June	1991	108.5	126.7	23.58	21.96	20.10	14.67	16.25
July	1991	108.2	126.8	24.70	22.52	20.17	14.52	16.07
Aug	1991	107.8	126.9	23.78	22.32	20.96	14.72	16.01
Sept	1991	107.6	126.7	24.23	22.43	20.61	14.95	16.40
Oct	1991	107.3	126.5	24.40	22.42	20.80	15.13	16.43
Nov	1991	107.3	127.0	24.58	22.68	21.05	15.00	16.46
Dec	1991	107.2	126.4	24.53	22.80	21.39	15.30	16.92
Jan	1992	107.2	127.0	24.79	22.78	21.48	15.78	16.91
Feb	1992	108.1	127.1	24.42	22.60	21.41	16.18	16.82
Mar	1992	108.2	127.5	24.92	22.92	21.37	16.31	16.62
Apr	1992	108.1	127.6	**[5]	23.39	22.04	16.60	16.69
May	1992	108.6	127.8	**	23.22	21.47	16.64	16.78
June	1992	108.9**R**	128.1	**	23.02**R**	20.71**R**	16.42**R**	16.51**R**
July	1992	109.1**R**	128.4	**	23.26**P**	20.65**P**	16.03**P**	16.45**P**
Aug	1992	109.2	128.4	**	—·—	—·—	—·—	—·—

P = Preliminary **R** = Revised since last month

[1] Statistics Canada, Prices Division, Ottawa: "Industry Price Indexes" (CATALOGUE 62-011). Indexes for the most recent six months shown are subject to revision. This category was formerly known as "Manufacturing." Monthly data for the period 1967 to 1990 is found in NUEXCO Monthly Report 278.

[2] New Base Year of 1986 as of NUEXCO Monthly Report 266. Previous Base Year was 1981.

[3] New Base Year of 1986 as of NUEXCO Monthly Report 264. Previous Base Year was 1981.

[4] Statistics Canada, Labour Division, Employment and Payrolls Section, Ottawa: "Employment, Earnings and Hours." Monthly data for the period 1983 to 1990 is found in NUEXCO Monthly Report 278. SIC number revisions shown starting in Monthly Report 287.

[5] As of April 1992, Statistics Canada no longer provides specific information on uranium mine wages. The data has been included with Metal Mines (SIC 061).

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South Africa

Year	Period	Average Declared Working Costs per Metric Ton of Gold Ore Milled [1] (Rand)	Tonnage-Weighted Index of Average Working Costs per Metric Ton of Gold Ore Milled [2] (March 1982 = 100)	Consumer Price Index [3] (1990 = 100)	Production Price Index All Groups [4] (1990 = 100)	Total Employment in Mining and Quarrying [5]	Total Salaries and Wages in Mining and Quarrying [5] (1,000 Rand)
						—	Annual Total [6]
1980	Avg.	35.50	—	25.5	27.7	709,042	2,237,689
1981	Avg.	41.87	—	29.4	31.5	722,918	2,756,928
1982	Avg.	47.23	103.9	33.7	35.9	702,041	3,181,584
1983	Avg.	51.88	115.0	37.8	39.7	700,901	3,563,282
1984	Avg.	58.95	130.3	42.2	43.0	711,511	4,134,390
1985	Avg.	68.70	151.7	49.1	50.3	724,587	4,778,612
1986	Avg.	80.18	177.9	58.2	60.1	756,637	5,767,950
1987	Avg.	95.01	223.1	67.6	68.5	751,864	6,911,395
1988	Avg.	106.69	241.1	76.2	77.5	705,355	7,774,054
1989	Avg.	116.65	273.0	87.4	89.3	700,360	8,833,934
1990	Avg.	129.37	305.3	100.0	100.0	677,742	10,193,209
1991	Avg.	136.06	322.4	115.1	111.4	630,722	10,934,073
							Monthly Total
Jan	1991	—	—	107.7	108.6	648,944	935,839
Feb	1991	—	—	109.0	109.0	650,948	893,373
Mar	1991	137.66	323.82	110.0	108.2	651,843	924,930
Apr	1991	—	—	111.5	108.8	639,939	887,722
May	1991	—	—	113.2	109.8	630,481	887,107
June	1991	134.65	317.23	114.0	110.3	640,908	890,595
July	1991	—	—	115.5	111.2	637,581	881,182
Aug	1991	—	—	117.1	112.0	633,699	963,710
Sept	1991	137.11	329.05	118.7	113.2	639,535	1,014,424
Oct	1991	—	—	119.8	114.8	584,435	860,529
Nov	1991	—	—	120.9	115.3	602,461	853,864
Dec	1991	134.81	319.33	123.8	115.8	602,486	940,798
Jan	1992	—	—	125.1	115.9	622,143	953,440
Feb	1992	—	—	126.2	116.3	620,846 R	930,659 R
Mar	1992	139.69	331.46	127.3	116.9	620,773	954,628
Apr	1992	—	—	128.9	118.4	608,027	941,295
May	1992	—	—	129.9	119.4	—	—
June	1992	140.69	334.63	131.2	120.5	—	—
July	1992	—	—	132.4	121.5	—	—
Aug	1992	—	—	133.8	—	—	—

P = Preliminary **R** = Revised since last month

[1] Chamber of Mines of South Africa, Johannesburg: "Analysis of Working Results," published quarterly. Historical Data by month appears in NUEXCO Monthly Report 278.

[2] Page 16 of Report 178 contains description and calculation of index.

[3] Central Statistical Service, Pretoria: All income groups-weighted average. Historical Data by month appears in NUEXCO Monthly Report 278.

[4] Central Statistical Service, Pretoria: All commodities for consumption in South Africa. Base Year changed from 1985 to 1990 in NUEXCO Monthly Report 284.

[5] Central Statistical Service, Pretoria: Historical Data by month appears in NUEXCO Monthly Report 236.

[6] Annual total is shown, rather than monthly average, for indicated year.

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GOVERNMENT STATISTICS

United States

Year	Period	Producer Price Index[1] Industrial Commodities (1982 = 100)	Producer Price Index[1] All Commodities (1982 = 100)	Consumer Price Index[2] (1982-84 = 100)	GNP Implicit Price Deflator[3] (1987 = 100)	GDP Implicit Price Deflator[3] (1987 = 100)	Gross Average Hourly Earnings of Production or Non-supervisory Workers (US$)[4] Metal Mining (SIC 10)	Primary Non-ferrous Metals (SIC 333)	Chemicals and Allied Products (SIC 28)	Electric and Electronic Equipment (SIC 36)
1980	Avg.	88.0	89.8	82.4	71.7	71.7	10.26	10.63	8.31	6.94
1981	Avg.	97.4	98.0	90.9	78.9	78.9	11.55	11.98	9.12	7.62
1982	Avg.	100.0	100.0	96.5	83.8	83.8	12.31	12.93	9.96	8.21
1983	Avg.	101.1	101.3	99.6	87.2	87.2	12.58	13.43	10.58	8.66
1984	Avg.	103.3	103.7	103.9	91.1	91.0	13.05	13.43	11.07	9.04
1985	Avg.	103.7	103.2	107.6	94.4	94.4	13.38	13.74	11.57	9.46
1986	Avg.	100.0	100.2	109.6	96.9	96.9	12.46	13.48	11.98	9.65
1987	Avg.	102.6	102.8	113.6	100.0	100.0	12.52	12.98	12.37	9.88
1988	Avg.	106.3	106.9	118.3	103.9	103.9	13.24	13.26	12.71	9.79
1989	Avg.	111.6	112.2	124.0	108.5	108.5	13.59	13.72	13.09	10.05
1990	Avg.	115.8	116.3	130.7	113.2	113.2	14.10	14.36	13.54	10.32
1991	Avg.	116.5	116.5	136.2	117.8	117.8	14.89	14.64	14.07	10.73
Jan	1991	119.3	119.0	134.6	—	—	14.73	14.63	13.85	10.60
Feb	1991	117.2	117.2	134.8	—	—	14.80	14.55	13.81	10.59
Mar	1991	115.6	116.1	135.0	116.4	116.5	14.93	14.55	13.85	10.55
Apr	1991	115.6	116.0	135.2	—	—	14.85	14.56	13.96	10.63
May	1991	116.1	116.5	135.6	—	—	14.79	14.52	14.01	10.66
June	1991	116.1	116.4	136.0	117.4	117.5	14.88	14.51	14.05	10.74
July	1991	116.0	116.1	136.2	—	—	15.09	14.56	14.16	10.77
Aug	1991	116.3	116.2	136.6	—	—	14.82	14.64	14.06	10.78
Sept	1991	116.3	116.1	137.2	118.2	118.2	15.04	14.59	14.21	10.84
Oct	1991	116.7	116.4	137.4	—	—	14.94	14.75	14.25	10.78
Nov	1991	116.7	116.4	137.8	—	—	15.29	14.89	14.27	10.88
Dec	1991	116.1	115.9	137.9	118.9	118.9	15.13	14.87	14.34	10.96
Jan	1992	115.7	115.6	138.1	—	—	15.06	14.74	14.30	10.90
Feb	1992	116.0	116.0	138.6	—	—	15.22	14.67	14.29	10.90
Mar	1992	115.9	116.1	139.3	119.8	119.8	15.05	14.57	14.26	10.92
Apr	1992	116.4R	116.3	139.5	—	—	15.02	14.61	14.39	10.98
May	1992	117.2	117.1	139.7	—	—	15.09	14.76	14.39	10.99
June	1992	118.0	117.8	140.2	120.6	120.6	15.15R	14.70R	14.38	11.06
July	1992	118.1	117.8	140.5	—	—	15.38P	15.03P	14.49R	11.05
Aug	1992	118.1	117.6	140.9	—	—	—	—	14.37P	11.06P

P = Preliminary **R** = Revised since last month

[1] US Bureau of Labor Statistics, Washington, DC: "Producer Prices and Price Indexes," (formerly "Wholesale Prices and Price Indexes"). Producer Price Indexes are revised four months after they are first released to reflect the availability of late reports and corrections by respondents. Historical data is presented in NUEXCO Monthly Report 278.

[2] US Bureau of Labor Statistics, Washington, DC: Consumer Price Index for All Urban Consumers, US City Average, All Items. Historical data is presented in NUEXCO Monthly Report 278.

[3] US Department of Commerce, Washington, DC: Bureau of Economic Analysis, National Income and Wealth Division: "Survey of Current Business." The Gross National Product (GNP) and Gross Domestic Product (GDP) Implicit Price Deflators (IDP) are published quarterly, and seasonally adjusted. Historical data for the GNP IPD is presented in Report 278. GDP IPD information first published in NUEXCO Monthly Report 288. GNP IPD Base Year change from 1982 to 1987 in NUEXCO Monthly Report 284.

[4] US Bureau of Labor Statistics, Washington, DC: "Employment and Earnings." All data based on 1972 revision of SIC Manual. Historical data is presented in NUEXCO Monthly Report 278.

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Uranium Deliveries To The European Community[1]

— Compiled from data published by the Euratom Supply Agency —

Year	Volume of Deliveries to the EC (MTU)	Percentage of Deliveries Made Under Spot Contracts	Medium or Long-Term Contracts Average Price		Spot Contracts Average Price	
			in ECU per pound U3O8	in US Dollars per pound U3O8	in ECU per pound U3O8	in US Dollars per pound U3O8
1977	n/a	n/a	n/a	n/a	n/a	$41.00
1978	n/a	n/a	n/a	n/a	n/a	$43.00
1979	10,000	n/a	n/a	n/a	n/a	$44.50
1980	8,600	n/a	n/a	$36.00	n/a	$35.00
1981	13,000	less than 10	n/a	$33.25	n/a	$28.00
1982	12,500	less than 10	ECU 32.25	$32.00	ECU 24.25	$24.00
1983	13,500	less than 10	ECU 34.75	$31.00	ECU 26.00	$23.25
1984	11,000	less than 10	ECU 37.75	$29.75	ECU 24.50	$19.25
1985	11,000	11.5	ECU 38.00	$29.00	ECU 19.50	$15.00
1986	12,000	9.5	ECU 31.50	$31.00	ECU 18.00	$17.75
1987	14,000	17.0	ECU 28.25	$32.50	ECU 15.00	$17.25
1988	12,500	4.5	ECU 26.92	$31.82	ECU 13.65	$16.13
1989	13,500	11.5	ECU 26.63	$29.35	ECU 11.04	$12.19
1990	12,803	16.7	ECU 23.08	$29.39	ECU 7.60	$ 9.68
1991	12,900	13.0	ECU 21.05	$26.09	ECU 7.30	$ 9.05

P = Preliminary **R** = Revised since last month

1 The twelve European Community member nations are Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, The Netherlands, Portugal, Spain, and the United Kingdom; prior to January 1986, Spain and Portugal were not members of the EEC.

2 The only deliveries taken into account are those made to final users, namely the electric utilities or their procurement organizations; deliveries to middlemen or fuel cycle companies are not included. The sales between utilities in the Community are also excluded. The quantities covered are those which were entered into accounting records during the year stated.

3 For deliveries made under medium or long-term contracts (i.e., for which the time between the date of signature and the date of the last delivery exceeds one year) the prices were expressed in seven different currencies. In order to calculate an average price, these prices have been converted into European Currency Units (ECU) and US dollars. The average prices were weighted by quantity and converted on the basis of the average annual exchange rate of the different currencies against the ECU and US dollar. Exchange rates are published by European Communities Statistical Office and the International Monetary Fund.

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GOVERNMENT STATISTICS

US Uranium Marketing Data

— Compiled from data published by the US Energy Information Administration[1] —

Year	Total Production (million pounds U_3O_8)	Deliveries to Domestic Utilities From US Suppliers (million pounds U_3O_8)	Average Price of Delivered Uranium[2] ($/lb. U_3O_8)	Quantity of Uranium Imported (million pounds U_3O_8)	Average Price of Imported Uranium ($/lb. U_3O_8)	Quantity of Uranium Exported (million pounds U_3O_8)
1976	25.5	27.6	$16.10	3.6	n/a	1.2
1977	29.9	27.8	$19.75	5.6	n/a	4.0
1978	37.0	31.6	$21.60	5.2	n/a	6.8
1979	37.5	33.0	$23.85	3.0	n/a	6.2
1980	43.7	35.0	$28.15	3.6	$43.10	5.8
1981	38.5	32.6	$34.65	6.6	$32.90	4.4
1982	26.9	23.5	$38.37	17.1	$25.19	6.2
1983	21.2	24.2	$38.21	8.2	$26.16	3.3
1984	14.9	22.5	$32.65	12.5	$21.86	2.2
1985	11.3	21.7	$31.43	11.7	$20.08	5.3
1986	13.5	18.9	$30.01	13.5	$20.07	1.6
1987	13.0	20.8	$27.37	15.1	$19.14	1.0
1988	13.1	17.6	$26.15	15.8	$19.03	3.3
1989	13.8	18.4	$19.56	13.1	$16.75	2.1
1990	8.9	20.5	$15.70	23.7	$12.55	2.0
1991	8.0	26.8	$13.66	16.3	$15.55	3.5

P = Preliminary **R** = Revised since last month

[1] Sources: 1976-1983: US Department of Energy/Energy Information Administration, *Survey of United States Marketing Activity*. 1984-1991: Energy Information Administration, *Uranium Industry Annual*.

[2] Data for 1976-1981 includes both domestic utilities and agents.

[3] Includes imports by domestic utilities and domestic suppliers.

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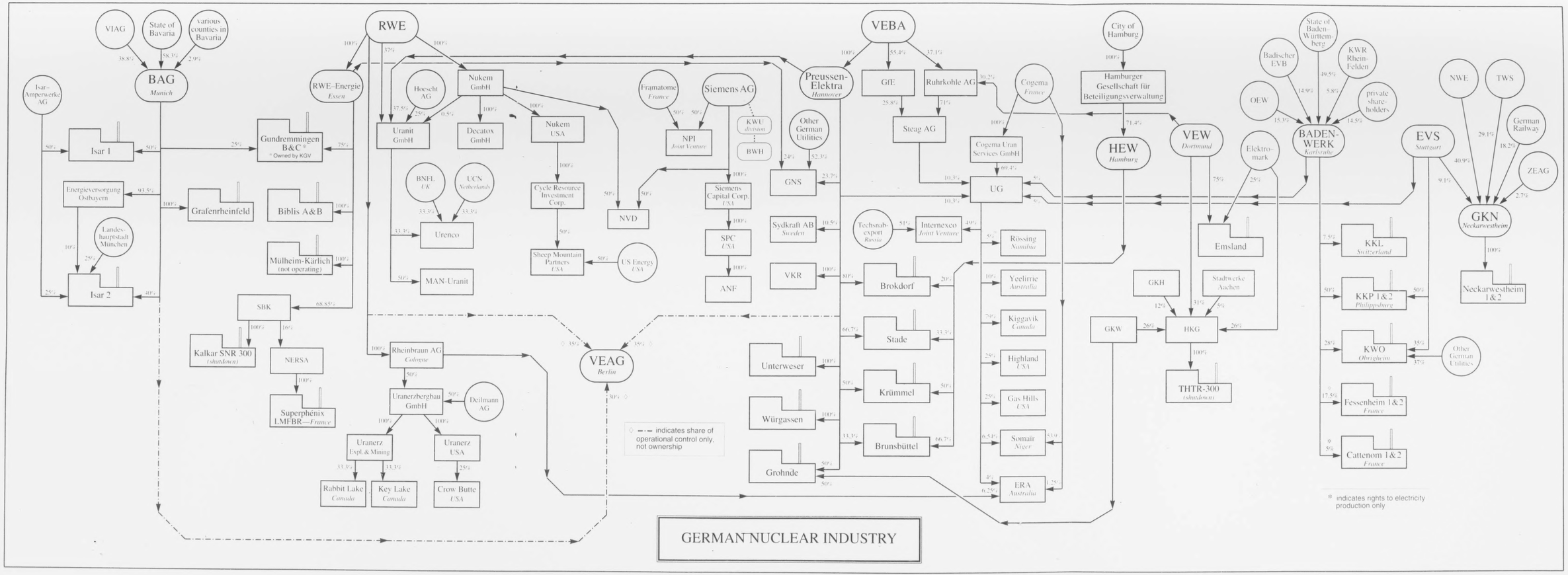

GERMAN NUCLEAR INDUSTRY

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